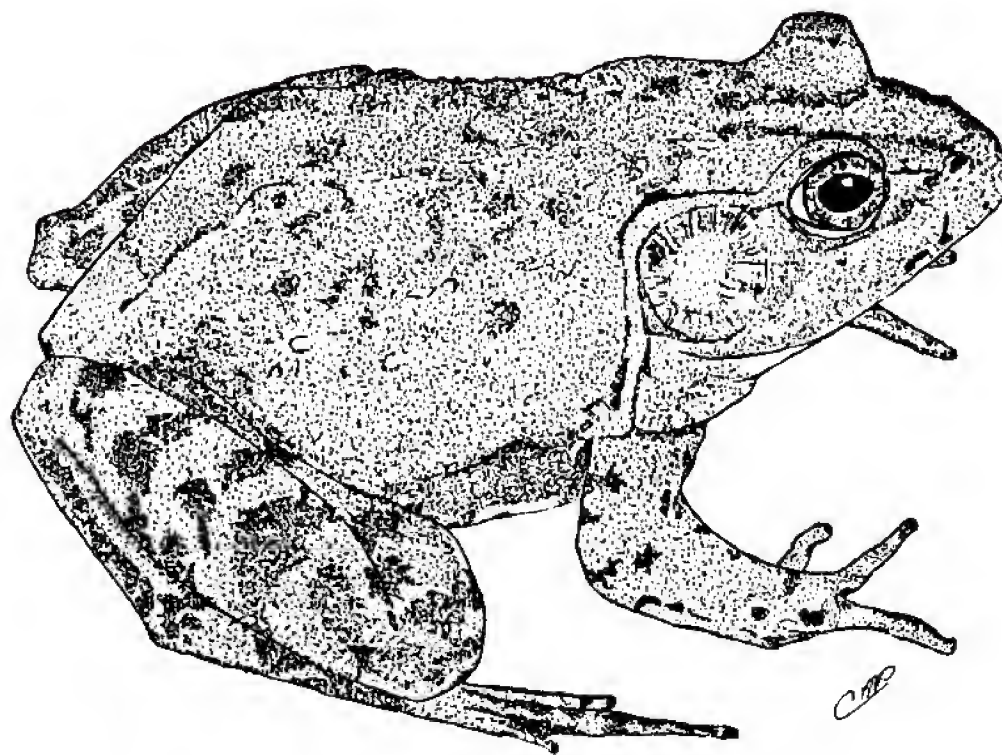


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JOURNAL INFORMATION

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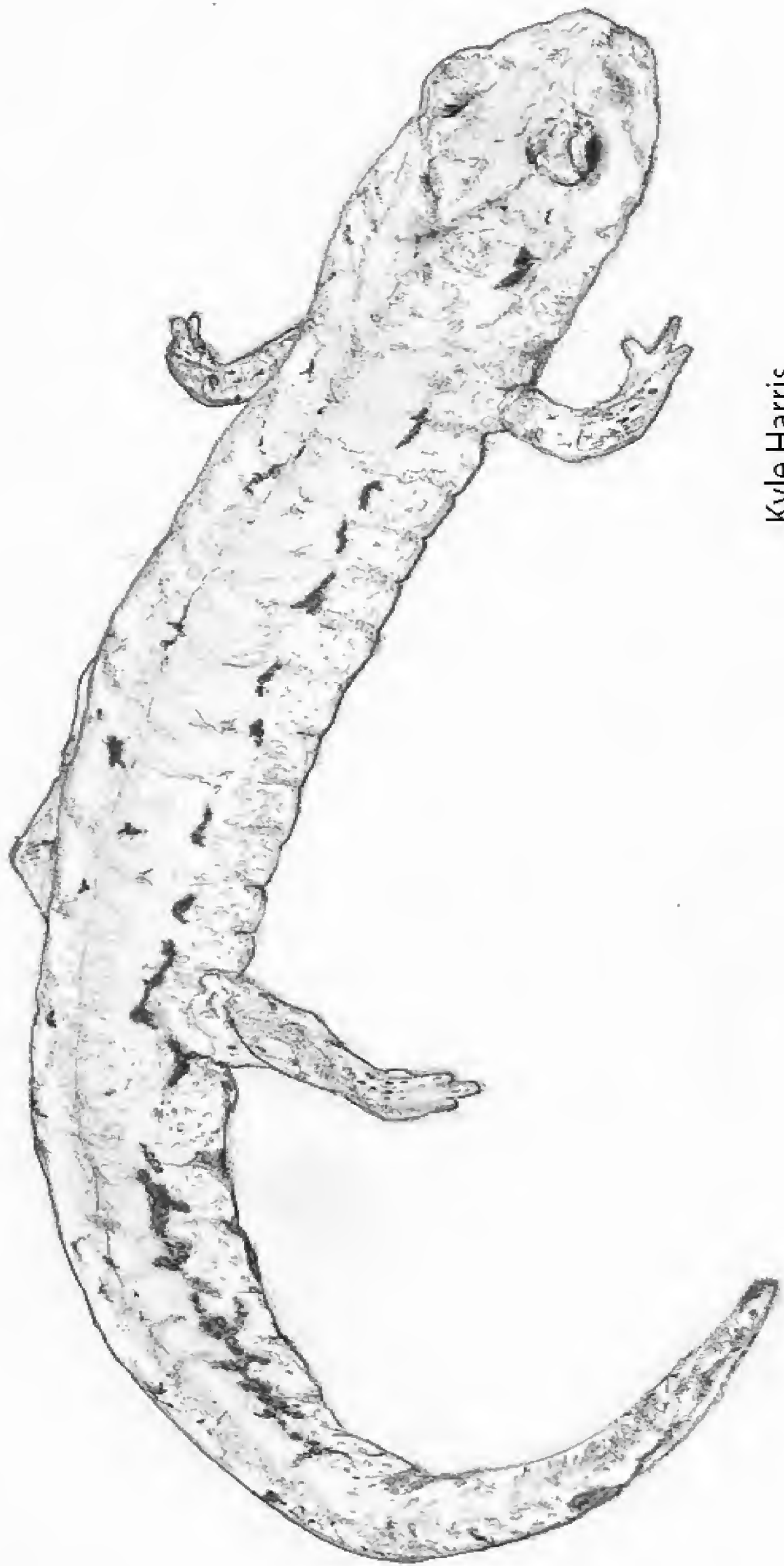
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Next Survey

See page 68 for the information on the VHS Spring Survey at Newport News Park.



Kyle Harris

Herpetological Survey of Chickahominy Wildlife Management Area 1 May & 15 May, 2016

David A. Perry
Virginia Herpetological Society
316 Taylor Ridge Way
Palmyra, VA 22963

Introduction

Chickahominy Wildlife Management Area (CWMA) is located in Charles City County. CWMA gains its name from the Chickahominy River, which forms its eastern boundary. To the south, Morris Creek flows through a portion of CWMA and then along its southern boundary. Other small tidal creeks and marshes cut into wooded forests to provide additional wetland diversity. The upland is mainly wooded, with mixed hardwood and pine stands but also features cultivated, mowed and old field openings. CWMA contains 2,111 hectares (5,217 acres) and is the only wildlife management area in the coastal plain that is managed primarily for upland species. Elevation ranges from 7 to 15 meters (25 to 50 feet).

The Virginia Herpetological Society (VHS) previously surveyed CWMA from 6 - 8 July, 2007 in combination with a survey of a Virginia Department of Forestry nursery located in New Kent County. The results of these earlier surveys were published in *Catesbeiana* Volume 28, Number 2 (Watson, 2008).

CWMA is of interest to the Conservation Committee as 12 herpetological species having a Virginia Department of Game and Inland Fisheries (VDGIF) conservation status of Tier I-IV have been documented for Charles City County. In addition, there are five other Tier I-IV species that have a potential range that would include Charles City County.

Due to the large area to be surveyed, two Sunday survey dates, 1 May and 15 May 2016 were selected. Sunday was the day chosen to avoid any safety concerns with spring turkey hunting season (Monday-Saturday). Thirteen participants surveyed CWMA on 1 May and nineteen participants surveyed on 15 May.

Survey Sites

The following is a general description of the survey sites. GPS coordinates were provided by the group leaders, except for Site-5. The GPS coordinates for Site 5 was provided by CWMA management at a later date.

Site-1-“Bubba’s Trail”/Morris Creek (37°318325N, -76°922987W) Site-1 is located off Wilcox Neck Road. Bubba’s Trail heads northeast from a parking area through mixed hardwoods and contains several metal sheets and a sawdust pile. Morris Creek and associated marshes are habitat located to the south and east of the parking area. This site was surveyed on 1 May and was briefly visited during the late afternoon of 14 May.

Site-2-Beaver Pond (37°.326271N, -76°.89907W) Site-2 is west of Eagles Nest Road and includes a beaver pond, its shoreline circumference, the marshes, and mixed hardwoods and pine stands that surround it. This site was surveyed on both 1 May and 15 May.

Site-3- Marshes/Woods (37°.336388N, -76°.914166W) Site-3 is south of the first parking area on Eagles Nest Road. It includes a trail through mixed hardwoods, marshes and shallow ponds. This site was surveyed on 1 May.

Site-4-Shooting Range/Trails (37°.29511N, -76°.888060W) Site-4 started at the shooting range and included two trails through mixed hardwood and pine stands and fields south and east toward bluffs overlooking the Chickahominy River. Site-4 was surveyed on 1 May.

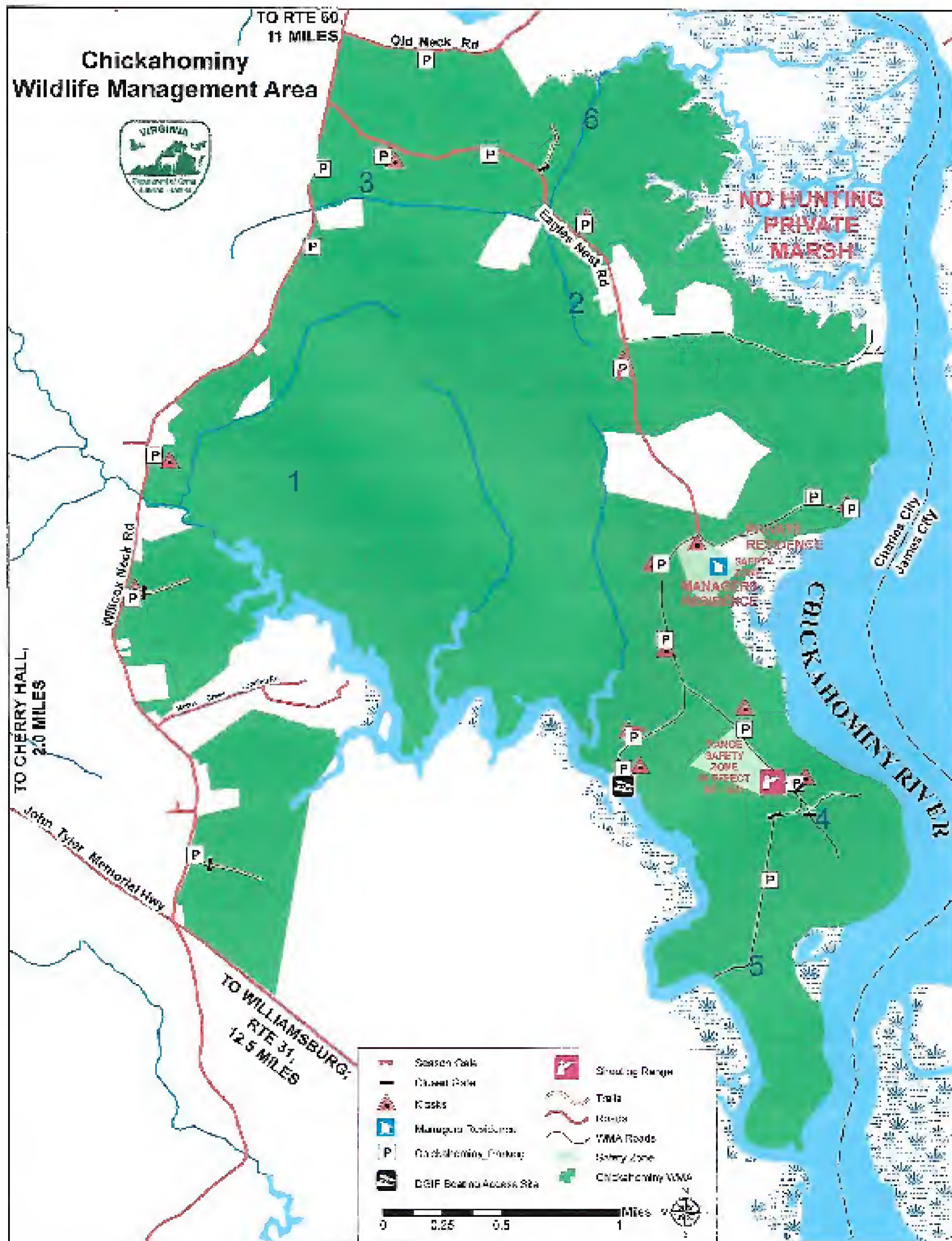
Site-5-Allen Tract (37°.289740 N, -76°.889199 W) Site-5 included the shooting range, the road south and west of the shooting range and surrounding fields and wet areas with some oak woods. Site 5 was surveyed on 15 May.

Site-6- Tributary to the Chickahominy River (37°.354722N, -76°.902501W) Site-6 includes a creek heading northeast from Eagles Nest Road and surrounding hillsides of mixed hardwoods with expanding marshes in the approach to the Chickahominy River. This site was surveyed on 15 May.



Chickahominy Wildlife Management Area Survey

Figure 1 Map showing the survey area. Survey sites are indicated by numbers.



Materials and Methods

Three hoop turtle traps, each baited with sardines, were positioned during the afternoon of Saturday 30 April in marshy areas within Site-3 (one) and Site-1 (two). These sites were selected because they appeared to be potential habitat for *Clemmys gutatta*, a species with VDGIF Tier III conservation status and known to be present within CWMA. Thirteen volunteers participated in the survey for approximately six hours (from 09:00 to 15:00h) in the field on Sunday 1 May for a total of about 55 man hours. Due to the large acreage and diverse habitat to be surveyed, two groups were organized to survey three sites within CWMA (Sites-1 through 3 as described above). Manpower and man hours for each of the survey groups, is recorded in Table 1.

Weather conditions were unfavorable for most of the day on 1 May, with wind and drizzle in the morning hours. Temperatures ranged from about 14-17 °C. At approximately 12:15h the survey was interrupted by heavy rain. From approximately 13:30 to 15:00h the survey groups combined into one group to survey Site-4. The turtle traps were recovered and inspected by D. Perry after the survey and were all found to be empty.

Survey participants on both survey days used multiple collecting methods to find amphibians and reptiles, including visual observation, listening for calling anurans, hand capture and over-turning objects with snake hooks and field sticks. All captured animals were observed to identify possible malformations, injuries or disease and other unique markings and characteristics. Digital photos were taken of many of the captured animals prior to their release at the site of capture. The two survey group leaders summarized and submitted all relevant data on VHS survey group data sheets.

On Saturday 14 May, D. Perry visited Site-1 from approximately 16:00 to 16:30h to determine if any turtles were basking. Skies were clear and sunny although storm clouds were beginning to gather. The air temperature was approximately 26 °C.

Nineteen volunteers participated in the survey on Sunday 15 May. Due to the large area to be surveyed, the volunteer participants were again split into groups. One group surveyed Site-5 and the other returned to re-survey Site-2 and surveyed Site-6 in the afternoon. The survey was conducted between 09:00 and 15:00h. Skies were clear and sunny, although the air temperature remained unseasonably cool and ranged from 13-19 °C. Table 1 is a summary of the survey effort on 1 May 2016 and Table 2 is a summary of the survey effort on 15 May 2016.

Table 1. Survey Effort per Site 1 May

Survey Site	No. of Surveyors	Hours	Estimated Person Hours
1-Bubba's Trail/Morris Creek	9	1	9
2-BeaverPond	8	2	16
3-Marsh Woods	3	3	15
4-Shooting Range/Trails	10	1.5	15
Total			55

Chickahominy Wildlife Management Area Survey

Table 2. Survey Effort per Site 15 May

Survey Site	No. of Surveyors	Hours	Estimated Person Hours
1-Bubba's Trail/Morris Creek	1	0.5	0.5
2-Beaver Pond	8	3	24
5-Allen Tract	11	5.5	60.5
6-Tributary to Chickahominy River	6	2.5	15
Total			100

Results

During the two day survey a total of 31 species were captured or positively identified, including 13 Amphibians and 18 Reptiles. The survey produced a total of nine anuran, four salamander, nine snake, six turtle and three lizard species. A total of 208 animals were captured or positively identified. However, only two of a potential twelve Charles County species with VDGIF conservation status tier I-IV were found. One new Charles City County record was documented (*Plestiodon laticeps*). Anurans were the most prominent animals captured or observed with 122 animals positively identified. Snakes were the most prominent reptiles with 33 animals positively identified. Table 3 summarizes the results for both survey dates. There may be some redundancy in reporting for Site-2 as this site was surveyed on both days.

Table 3. Number of each species found, per Site CWMA.

Site/Species	1	2	2	3	4	5	6	Total
		5/1	5/15					
Class Amphibia								
Anuran Species								
<i>Acris crepitans & Acris gryllus</i>		23	20	12		2	5	62
<i>Anaryxus a. americanus</i>		1	1		14	1	2	5
<i>Anaryxus fowleri</i>	4	3				12	1	34
<i>Hyla chrysoscelis</i>					1			1
<i>Hyla cinerea</i>						7	1	8
<i>Lithobates clamitans</i>		1	1			4	2	8
<i>Lithobates sphenoccephalus</i>				2		1	1	4
<i>Pseudacris crucifer</i>					CM			CM
Total Anurans	4	28	22	14		27	12	122

Salamander species								
<i>Ambystoma opacum</i>	1		1	2			1	5
<i>Notophthalmus v. virdescens</i>				1				1
<i>Plethodon chlorobryonis</i>		1						2
<i>Plethodon cylindraceus</i>							1	
Total Salamanders	1	1	1	3			2	8
Total Amphibians	5	29	23	17		27	14	130
Class Reptilia								
Snake Species								
<i>Agkistrodon contortrix mokasen</i>	3							3
<i>Carphopis a. amoenus</i>	2	2	1	1		1	2	9
<i>Coluber c. constrictor</i>	2					8	2	11
<i>Diadophis punctatus edwardsi</i>		1						1
<i>Heterodon platirhinos</i>						1		1
<i>Lampropeltis getula</i>	1							1
<i>Nerodia s. sipedon</i>							1	1
<i>Pantheraphis alleghaniensis</i>						3		3
<i>Storeria d. dekayi</i>						3		3
Total Snakes	8	3	1	1		16	4	33
Turtle species								
<i>Chelydra serpentina</i>			1					1
<i>Chrysemys p. picta</i>	1		1					2
<i>Kinosternon s. subrubrum</i>			2			1		3
<i>Pseudemys rubriventris</i>	1							1
<i>Sternotherus odoratus</i>		2						2
<i>Terrapene c. carolina</i>			4	2		9	2	19
Total Turtles	2	2	8	2		10	2	28
Lizard Species								
<i>Plestiodon fasciatus</i>	1	2	1	1		1		6
<i>Plestiodon laticeps</i>						1		1
<i>Scincella lateralis</i>	1	2				6	1	10
Total Lizards	2	4	1	1		8	1	17
Total Reptiles	12	9	10	4		34	7	78

Chickahominy Wildlife Management Area Survey

Key								
Site-1-“Bubba”s Trail”/Morris Creek								
Site-2-Beaver Pond (5/1 & 5/15).								
Site-3-Marsh/Woods								
Site-4-Shooting Range/Trails								
Site-5-Allen Tract								
Site-6-Tributary to Chickahominy River								

Annotated Checklist

Amphibians

1. *Acris crepitans* & *Acris gryllus* (Eastern Cricket Frog and Southern Cricket Frog) Sixty-two cricket frogs were observed throughout the survey. In addition, there were many calling males, especially within Sites-2 & 3. Eastern Cricket Frogs were positively identified within both Sites-2 & 3. Southern Cricket Frogs were heard calling near the beaver pond within Site-2 on 15 May. There is no previous record of Southern Cricket Frogs in Charles City County. However, a digital recording will be required for verification, which was not possible during the surveys. Forty-three cricket frogs were found in the vicinity of the beaver pond within Site-2. Most of the survey participants were unable to visually distinguish between *Acris crepitans* & *Acris gryllus*, hence a combined species count is reported in Table 3. Most of the cricket frogs were adults and were located in the leaf litter, hopping about or on the edge of the beaver pond. Twelve adult cricket frogs were found within leaf litter at Site-3. Two cricket frogs were observed in a moist grassy area within Site-5 and five adults were observed in reedy marshy habitats within Site-6. No injuries or deformations were reported.

2. *Anaxyrus a. americanus* (American Toad) Five American Toads were positively identified during the survey. An adult American Toad was captured on the pathway of “Bubba’s Trail” within Site-1. Another adult American Toad was found under a log near the beaver pond within Site-2. One adult American Toad was found near the road within Site-5. One adult and one juvenile American Toad were found hopping on the ground in the wooded section of Site-6. All of the specimens encountered appeared to be healthy.

3. *Anaxyrus fowleri* (Fowler’s Toad) Thirty-four Fowler’s Toads were observed during the survey. Four adult Fowler’s Toads were captured along “Bubba’s Trail” within Site-1. Three adult Fowler’s Toads were under and beside logs near the beaver pond within Site-2. After a period of heavy rain two adult Fowler’s Toads were found under boards behind the shooting range and twelve juvenile and sub-adult Fowler’s Toads were observed on the trails from the shooting range to the bluffs overlooking the Chickahominy River within Site-4. Ten of these toads were hopping on the trails and two were sitting at the base of trees. No injuries or deformations were reported.

4. *Hyla chrysoscelis* (Cope’s Gray Treefrog) An adult Cope’s Gray Treefrog was heard in the woods near the trail from the shooting range to the bluffs overlooking the Chickahominy River

within Site-4.

5. *Hyla cinerea* (Green Treefrog) Seven Green Treefrogs were heard calling or observed from a reedy/marshy area along the road within Site-5. One adult was captured and photographed. One sub-adult Green Treefrog was captured and photographed in a reedy and marshy habitat within Site-6.

6. *Lithobates clamitans* (Green Frog) Eight Green Frogs were observed during the survey. An adult Green Frog was captured under a log near the beaver pond and one adult male could be heard calling from the beaver pond within Site-2. Four adult Green Frogs were observed along the road and field edges within Site-5. One juvenile Green Frog (with a tail) was captured with a dip net from a puddle and one male could be heard calling from the marsh within Site-6. The captured animals appeared to be healthy.

7. *Lithobates sphenoccephalus* (Southern Leopard Frog) Four Southern Leopard Frogs were encountered during the survey. Two neonate Southern Leopard Frog tadpoles were observed and photographed in a vernal pool within Site-3. One Southern Leopard Frog was observed in a puddle within Site-5 and one adult Southern Leopard Frog was captured with a dip net from the creek in Site-6 and was photographed. The captured specimens appeared to be healthy.

8. *Pseudacris crucifer* (Spring Peeper) Male Spring Peepers could be heard calling from the wooded area, after a heavy rainstorm, east and southeast from the shooting range within Site-4.

9. *Ambystoma opacum* (Marbled Salamander) Five Marbled Salamanders were positively identified during the survey. One recently metamorphosed specimen was found at Site-1 alongside an almost-dry puddle. One adult was observed in a log along a wooded trail south of the beaver pond within Site-2. One adult and one sub-adult were observed under logs along a wooded trail within Site-3. One sub-adult was found under a log on a dry wooded hillside within Site-6. All of the Marbled Salamanders appeared to be healthy and several were photographed.

10. *Notophthalmus v. viridescens* (Red-spotted Newt) One adult specimen was captured using a dip net from a large mud puddle alongside a wooded trail within Site-3. The Red-spotted Newt appeared to be healthy and was photographed.



11. *Plethodon chlorobryonis* (Atlantic Coast Slimy Salamander) One adult Atlantic Coast Slimy Salamander was observed during the survey. This adult was captured on the west side of the beaver pond within Site-2. It was photographed and appeared to be healthy.

12. *Plethodon cylindraceus* (White-spotted Slimy Salamander) One juvenile White-spotted Slimy Salamander was found under a log on a dry wooded hillside within Site-6 and was photographed. This specimen appeared to be healthy.

Reptiles

13. *Agkistrodon contortrix mokasen* (Northern Copperhead) Three adult Northern Copperheads, two females and one male, were encountered near Bubba's Trail within Site-1. All were found under tin metal sheets in the woods near a sawdust pile. One of the Northern Copperheads was under a tin metal sheet along with an Eastern Kingsnake and a Common Five-lined Skink. All of the Northern Copperheads appeared to be healthy.

14. *Carphophis a. amoneus* (Eastern Wormsnake) Nine adult Eastern Wormsnakes were found during the survey. Two adult Eastern Wormsnakes were captured from overturned logs along Bubba's Trail within Site-1. Three adult Eastern Wormsnakes were captured and photographed in the woods surrounding the beaver pond within Site-2. Two were under logs and one gravid female was under bark. One adult Eastern Wormsnake was captured under bark within Site-3. One adult Eastern Wormsnake was observed near the banks of the Chickahominy River within

Site-5 and two adult Eastern Wormsnakes were captured from under logs on hillsides within Site-6. All of the Eastern Wormsnakes appeared to be healthy.

15. *Coluber c. constrictor* (Northern Black Racer) Eleven Northern Black Racers were observed during the survey. Two adult Northern Black Racers were captured under tin metal sheets along Bubba's Trail within Site-1 and were photographed. Eight adult Northern Black Racers were observed in the fields and woods within Site-5. One of these eight observed individuals had some evident deformations. One large adult was captured in marsh grass alongside the creek within Site-6 and was photographed. All but the one aforementioned Northern Black Racer appeared to be healthy.

16. *Diadophis punctatus edwardsii* (Northern Ring-necked Snake) A healthy adult Northern Ring-necked Snake was captured under bark near the beaver pond within Site-2 and was photographed.

17. *Heterodon platirhinos* (Eastern Hog-nosed Snake) A brightly patterned adult Eastern Hog-nosed Snake was captured crossing the road within Site-5. The snake was photographed and appeared to be healthy.



18. *Lampropeltis getula* (Eastern Kingsnake) An Eastern Kingsnake was found under a metal tin sheet near Bubba's Trail within Site-1. This specimen was captured and photographed and had some possible minor head scale issues. A Northern Copperhead and Common Five-lined Skink were also present under the same metal sheet.

Chickahominy Wildlife Management Area Survey

19. *Nerodia s. sipedon* (Northern Watersnake) A juvenile Northern Watersnake was observed basking on a branch alongside the creek within Site-6. The snake was captured, photographed and appeared to be healthy.

20. *Pantherophis alleghaniensis* (Eastern Ratsnake) Three adult Eastern Ratsnakes were observed along a wet field edge within Site-5. Two were captured and there was a small scar on one of the specimens. The third Eastern Ratsnake was photographed constricting and consuming an Eastern Cottontail Rabbit.



21.

21. *Storeria d. dekayi* (Northern Brownsnake) Three adult Northern Brownsnakes were found under logs in a wooded area within Site-5. All were captured, photographed and appeared to be healthy.

22. *Chelydra serpentina* (Snapping Turtle). The carapace of a deceased sub-adult Snapping Turtle was found at the base of hollowed-out section of a hardwood tree near the east end of the beaver pond within Site-2.

23. *Chrysemis p. picta* (Eastern Painted Turtle) Two adult Eastern Painted Turtles were observed basking. One was observed during the late afternoon of 14 May (~16:15 hr) on an angular log/tree stump in the middle of Morris Creek within Site-1. Skies were clear and sunny and the temperature was about 26°C. Another adult Eastern Painted Turtle was observed basking on a log in the beaver pond within Site-2.

24. *Kinosternon s. subrubrum* (Eastern Mud Turtle) Two adult Eastern Mud Turtles and the shell remnants of a juvenile Eastern Mud Turtle were found during the survey. One of the healthy adults was found on the trail south of the beaver pond within Site-2 and was captured and photographed. The complete shell of the deceased juvenile was found under a log on the east side of the beaver pond and the hinge on the plastron was still functional. The other adult Eastern Mud Turtle was observed within Site-5 alongside the Chickahominy River.

25. *Pseudemys rubriventris* (Northern Red-bellied Cooter). An adult Northern Red-bellied Cooter was observed basking on the same angular log/tree stump in the middle of Morris Creek within Site-1 at the same time as the Eastern Painted Turtle noted above.

26. *Sternotherus odoratus* (Eastern Musk Turtle). Two adult Eastern Musk Turtles were captured on the ground and next to logs near the beaver pond within Site-2. Each specimen appeared healthy and one was photographed.

27. *Terrapene c. carolina* (Woodland Box Turtle) A total of nineteen box turtle observations, including adults, a juvenile and the remnants of deceased turtles, were made during the survey. Two healthy adult Woodland Box Turtles were found in leaf litter on the north side of the beaver pond and two faded carapace remnants of deceased Woodland Box Turtles were found on the east side edge of the beaver pond within Site- 2. Within Site-3, one healthy juvenile Woodland Box Turtle was captured on the forest floor and was photographed. The carapace remains of a deceased adult Woodland Box was found in muck near the marsh. Two healthy adult Woodland Box Turtles were captured on a trail and in the woods just south of the shooting range within Site-4. Nine adult Woodland Box Turtles, four females and five males, were captured in the fields along the road within Site-5. Almost all were healthy, except for one that had some shell damage. One healthy adult male Woodland Box turtle was captured and photographed in the leaf litter on a mixed hardwood hillside and the faded carapace of a deceased adult was located nearby within Site-6.

28. *Plestiodon fasciatus* (Common Five-lined Skink) Six Common Five-lined Skinks were encountered during the survey. One adult Common Five-lined Skink was observed under a tin metal sheet (along with a Northern Copperhead and an Eastern Kingsnake) near Bubba's Trail within Site-1. Three juvenile Common Five-lined Skinks were captured and photographed within Site-2. These were found on a log, under bark and at the swamp edge. One juvenile Common Five-lined Skink was observed under bark within Site-3 and one juvenile was found in the fields within Site-5.

29. *Plestiodon laticeps* (Broad-headed Skink) An adult female Broad-headed Skink was captured on a tree near the road within Site-5. The skink appeared healthy and was photographed. This is first Broad-headed Skink documented for Charles City County.



30. *Scincella lateralis* (Little Brown Skink) Ten Little Brown Skinks were found during the survey. An adult Little Brown Skink was captured from under a tin metal sheet near Bubba's Trail within Site-1 and was photographed. Two adult Little Brown Skinks were captured under logs near the beaver pond within Site-2. Three adult Little Brown Skinks were observed in the woods and three juvenile Little Brown Skinks were observed near the Chickahominy River within Site-5. One adult Little Brown Skink was observed in pine needles within Site-6.

Discussion

During the two day survey of CWMA, the VHS survey groups positively identified 208 specimens representing thirty one species (Table 3). There were thirteen species of amphibians (nine frogs and four salamanders) and eighteen species of reptiles (nine snakes, six turtles and three lizards). Twenty nine of the thirty one species encountered had been previously documented for Charles City County. One new county record, *Plestiodon laticeps* (Broad-headed Skink) was documented. *Plestiodon laticeps* had previously been documented in counties to the east, south and west of Charles City County. Males of a second undocumented species, *Acris gryllus*, were heard calling from within Site-2, near the beaver pond but the calls were not recorded, so no voucher is available.

There were two tiered species captured and photographed; *Heterodon platirhinos* (Eastern Hog-nosed Snake) and *Terapene c. carolina* (Woodland Box Turtle). *Heterodon platirhinos* has a VDGIF Tier IV status, meaning moderate conservation need. This species may be rare in parts of its range, particularly on the periphery. Populations of this species have demonstrated a significantly declining trend or one is suspected which is likely to qualify this species for a higher tier in the foreseeable future. Long term planning is necessary to stabilize or increase

populations. During the survey one brightly patterned specimen was captured and photographed. Populations of *Heterodon platirhinos* were previously known to be present in CWMA, although most sightings by CWMA management are of the black color phase. *Terapene c. carolina* has a VDGIF Tier III status, meaning high conservation need. VDGIF has identified habitat loss and fragmentation, highway mortality and illegal collection for the pet trade as the primary threats to this species. Disease may be an emerging threat, particularly in suburban areas. Despite its Tier III status, *Terapene c. carolina* was the most frequently observed reptile during the survey. Fifteen living individuals were captured during the survey and were found at all survey sites except Site-1. The carapace remains of four adults were found at Site-2 (two), Site-3 (one) and Site-6 (one). All carapace remains were substantially faded, indicative that mortality was not recent.

Nine other species with VDGIF conservation status Tier IV –II had previously been documented for Charles City County, but were not observed during the survey. These are *Cemophora coccinea copei* (Northern Scarletsnake), *Clemmys guttata* (Spotted Turtle), *Farancia a. abacura* (Eastern Mudsake), *Farancia e. erytrogamma* (Common Rainbow Snake), *Malaclemys t. terrapin* (Northern Diamond-backed Terrapin), *Pseudotriton m. montanus* (Eastern Mud Salamander), *Scaphiopus holbrookii* (Eastern Spadefoot), *Siren lacertina* (Greater Siren) and *Thamnophis s. sauritus* (Common Ribbonsnake). At least one of these species *Clemmys guttata* is known to be present within CWMA. A substantial effort was made to locate *Clemmys guttata*. Three hoop turtle traps, baited with sardines, were positioned in marsh habitat within Site-1 (two) and Site-3 (one) that appeared suitable for *Clemmys guttata*. In addition, 15 person hours were spent at Site-3, which is not far from where CWMA management observed *Clemmys guttata* in the past. However, no specimens were found during the survey.

The VHS previously surveyed CWMA from 6 to 8 July 2007. Weather conditions were hot and dry on those survey dates with maximum temperatures of 32°C, 35°C and 36°C on each successive day. This compares with the 2016 surveys where the maximum temperatures were 17°C on 1 May, amid overcast skies and a period of heavy rain, 19°C on 15 May under dry and sunny conditions and 26°C at 16:00h on 14 May under sunny skies. There was substantial overlap in the areas surveyed with exceptions of 2007 Site-C2, the area south and southwest of Morris Creek, which was not surveyed in 2016 and the 2016 Site-6, the tributary and marsh flowing northeast to the Chickahominy River was not surveyed in 2007. Despite the contrast in weather conditions seventeen species were found in both the CWMA portion of the 2007 survey and the 2016 surveys. These include among amphibians: *Acris crepitans*, *Anaxyrus a. americanus*, *Anaxyrus fowleri*, *Hyla chrysoscelis*, *Lithobates clamitans*, *Lithobates sphenoccephalus*, *Pseudacris crucifer* and *Plethodon chlorobryonis* and among reptiles: *Carphophis a. amoenus*, *Coluber c. constrictor*, *Nerodia s. sipedon*, *Pantherophis alleghaniensis*, *Storeria d. dekayi*, *Pseudemys rubriventris*, *Sternotherus odoratus*, *Terapene c. carolina* and *Plestiodon fasciatus*.

Six species were observed in 2007 that were not found in 2016. These include among amphibians: *Gastrophryne carolinensis* (Eastern Narrow-mouthed Toad), *Lithobates catesbeianus* (American Bullfrog), *Eurycea cirrigera* (Southern Two-lined Salamander) and *Hemidactylium scutatum* (Four-toed Salamander) and among reptiles: *Pseudemys concinna concinna* (Eastern River Cooter) and *Sceloporus undulates* (Eastern Fence Lizard).

Fourteen species were observed in 2016 that were not found in 2007. These include among amphibians: *Acris gryllus*, *Hyla cinerea*, *Ambystoma opacum*, *Notophthalmus v. viridescens*

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and *Plethodon cylindraceus* and among reptiles: *Agkistrodon contortrix mokasen*, *Diadophis punctatus edwardsii*, *Heterodon platirhinos*, *Lampropeltis getula*, *Chelydra serpentina*, *Chrysemys p. picta*, *Kinosternon s. subrubrum*, *Plestiodon laciteps* and *Scincella lateralis*.

The combined results of the 2007 and 2016 documented thirty seven species within CWMA, including seventeen species of amphibians and twenty species of reptiles.

On the morning of 1 May, one of the survey teams discovered *Agkistrodon contortrix mokasen*, *Lampropeltis getula* (specimen depicted below) and *Plestiodon fasciatus* under the same tin metal sheet in close proximity to each other. It is not known if species proximity is habitual among potential prey and predators. Linzey and Mitchell (1981) published a report of two *Diadophis punctatus edwardsii* and one *Thamnophis s. sirtalis* (Eastern Garter Snake) under the same rock as a *Lampropeltis t. triangulum* (Eastern Milksnake) in Shenandoah National Park.



Literature Cited

- Kleopfer, J.D., T.S.B. Akre, S.H. Watson and R. Boettcher. 2014. A Guide to the Turtles of Virginia. Bureau of Wildlife Resources Special Publication Number 4, Virginia Department of Game and Inland Fisheries. Richmond, VA. 44pp.
- Linzey, D.W., and M.J. Clifford. 1981. Snakes of Virginia. University of Virginia Press, Charlottesville, VA. 76pp.

Mitchell, J.C. and K.K. Reay. 1999. Atlas of Amphibians and Reptiles in Virginia. Virginia Department of Game and Inland Fisheries Special publication Number One Richmond, VA 87pp

Watson, S.H. 2008 Herpetofaunal Survey of Chickahominy Wildlife Management Area and New Kent Forestry Center Catesbeiana 28(2) 39-56

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15 May Survey Participants: Travis Anthony, Justin Apfel, Tim Bova, Maddy Dunn, David Garst, Caleb Gowin, Jacob Hinton, Julie Hinton, Wyatt Jamerson, Frank Knott IV, Karl Kratzer, Catey Lavagnino, Greg McGovern, Jade Mellor, Dave Perry, Ned Rose, Yohn Sutton, David Van Gelder and Susan Watson.



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A Herpetological Survey of The Quarry Gardens in Schuyler, Virginia

Matthew Neff
Department of Herpetology
National Zoological Park
Smithsonian Institution
MRC 5507, Washington, DC 20013

Introduction

The Virginia Herpetological Society (VHS) Quarry Gardens Survey was held at the Quarry Gardens in Schuyler, Virginia on 4 June 2016. This was the first herpetological survey conducted on the grounds (Bernice Thieblot, pers comm). The Gardens are located in Nelson County and there are several different types of habitat on the grounds: rocky outcrops, boggy meadows, springs, seepages, and forested hillsides. The variety of habitats makes it an ideal place to survey for local herpetofauna. The Quarry Gardens is comprised of 242.8 hectares (ha) with 16.2 ha around the native plant gardens and 21.4 kilometers (km) of trails. In the 1920's a soapstone processing plant was located in Schuyler, Virginia. Five of these quarry pits are the center of what is now The Quarry Gardens at Schuyler (Smith, 2015). In 1990 the land became privately owned and currently exists to: preserve and exhibit relics of the soapstone quarrying industry, assist the natural process of plant and habitat restoration, showcase native plant communities for public education and enjoyment, and maintain records of plants and animals as a resource for study.

The Quarry Gardens in Schuyler, Virginia is located on the edge of the Piedmont and Blue Ridge Provinces of Virginia (Mitchell and Reay, 1999) at 150 meters (m) elevation. Characteristics of the Piedmont Province is the presence of metamorphic rocks, like soapstone, and elevations of up to 90 m (Tobey, 1985). The Blue Ridge Province predominantly has igneous and metamorphic rocks and elevations ranging from 30 m to as high as 1,000 m (Thomas, 2010). The section of Nelson County that was surveyed is a southeastern mixed forest with plains and low mountains (Mitchell and Reay, 1999). The basic, upland soils found around the area support oak-hickory forests (Fleming, 2016). Although the Quarry Gardens is technically located in the Piedmont Province which is known for its poorly draining loamy or clay-like soils (Thomas, 2010), the soil at the Gardens is a magnesium-rich, alkaline soil (Smith, 2015). This magnesium-alkaline soil is more typical of soils in the mountainous areas of Virginia (Fleming, 2016). This makes the soil at the Quarry Gardens a unique soil-type for the area. Usually alkaline soil is present in soils near weathered carbonate formations such as limestone (Fleming, 2016) or in the case of the Quarry Gardens due to the soapstone that was mined on the grounds.

Study Sites

There were three study sites (see Figure 1 for survey areas)

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Site 1 (37°46'43"N, 78°42'27"W)

This site was around the main quarry gardens. The two paths hugged the large quarry ponds and also had a mixture of rocky outcrops, springs, streams, and upland mixed hardwood forests.

Site 2 (37°46'47"N, 78°42'52"W)

This site was off a dirt road that had a mix of springs, ponds, upland mixed hardwood forests, and rhododendron groves.

Site 3 (37°46'59"N, 78°42'43"W)

This site was up the road from site 2 and had ponds and mixed hardwood forests.

Figure 1. Map showing survey area.



Materials and Methods

On Saturday, 4 June survey participants were divided into 2 groups. Field gear was disinfected before surveying. Methods used to find animals included hand capture, visual observation, listening for calling anurans, and flipping over cover objects. All animals were photographed as voucher specimens and animals with abnormal patterning, signs of disease, or injury were especially noted. Group leaders filled out survey data sheets to record all animals encountered. Group leaders were tasked with recording all observations on standardized recording sheets which included: information on the physical environment, weather, animal health, and microhabitat. Other data collected included morphometric measurements of rare species, age, and sex. Data forms and digital photos of new county records from this survey were deposited into the VHS archives. Site 1 was surveyed in the morning from 0850hr – 1200hr. Sites 2 and 3 were surveyed

in the afternoon from 1300hr – 1500hr (see Table 1 for amount of survey effort expended at each site).

Table 1: The amount of survey effort per site for the 2016 Quarry Survey.

	Site 1	Site 2	Site 3	Total
Number of Surveyors	15	5	6	-
Hours Surveyed	3.25	2.0	2.0	-
Person Hours of Survey effort	48.75	10.0	12.0	70.75

Results

A total of 15 volunteers met at the Quarry Gardens on Saturday, 4 June 2016. Over 60 individual animals of 17 different species of herpetofauna were documented during this survey (see Table 2).

There were a few noteworthy finds. Several *Scincella lateralis* (Little Brown Skink) were observed; this is the first vouchered record of this species for Nelson County, Virginia. Additionally, one *Eurycea guttolineata* (Three-lined Salamander) was observed. This is the first time *E. guttolineata* has been documented in Nelson County. On the pre-survey, conducted Saturday, 28 May 2016, what appeared to be an amelanistic *Anaxyrus americanus americanus* (American Toad) was observed at site 2. This individual is not reflected on the tally below.

Table 2. Summary of the number of amphibians and reptiles observed at each site.

Sites	1	2	3	Total
<u>Amphibians</u>				
<i>Acris crepitans</i>	11		6	17
<i>Anaxyrus americanus americanus</i>	1			1
<i>Anaxyrus fowleri</i>	2			2
<i>Desmognathus fuscus</i>		1		1
<i>Eurycea guttolineata</i>		1		1
<i>Hyla versicolor</i>	1		1	2
<i>Lithobates catesbeianus</i>	1	6		7
<i>Lithobates clamitans</i>	4		4	8
<i>Notophthalmus viridescens viridescens</i>	3	1		4
<u>Reptiles</u>				
<i>Carphophis amoenus amoenus</i>	1			1
<i>Diadophis punctatus</i>	1	1		2
<i>Pantherophis alleghaniensis</i>	1		2	3

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<i>Plestiodon faciatus</i>	4			4
<i>Pseudemys concinna concinna</i>	1			1
<i>Sceloperus undulatus</i>	5			5
<i>Scincella lateralis</i>	3			3
<i>Terrapene carolina carolina</i>	2	1	1	4
Total:	41	11	14	66

Annotated Checklist

Amphibians

1. *Acris crepitans* (Northern Cricket Frog)

Cricket Frogs were found on the periphery of the pond habitats at both sites 1 and 3. Eggs were also observed at site 1 in puddles and shallow drainage areas. Adult males were calling at site 1.

2. *Anaxyrus americanus americanus* (American Toad)

A single juvenile American Toad was observed at site 1 under a rock in a woodland habitat. What appeared to be an amelanistic individual was observed the weekend before, during the pre-survey at site 2 in tall grass next to a forest. It is pictured below with an *Anaxyrus fowleri* found beside it for color reference.



3. *Anaxyrus fowleri* (Fowler's Toad)

Two Fowler's Toads were observed, one juvenile and one adult. Both were under cover objects in an upland forest at site 1.

4. *Desmognathus fuscus* (Northern Dusky Salamander)

A single adult Northern Dusky Salamander was observed at site 2 under a log on the edge of a seep.

5. *Eurycea guttolineata* (Three-lined Salamander)

A single sub-adult Three-lined Salamander was found upstream of the Dusky Salamander at site 2 under a log on the edge of a seep that led to a larger body of water.



6. *Hyla versicolor* (Gray Treefrog)

Two adult Gray Treefrogs were observed. One was at site 1 sleeping and tucked away on a tree branch overhanging one of the quarry ponds, the other was calling at site 3.

7. *Lithobates catesbeianus* (American Bullfrog)

Seven American Bullfrogs were observed. A single adult was found at site 1 in the mouth of a stream in shallow water. Six juveniles were observed at site 2 at the edge of a pond.

8. *Lithobates clamitans* (Green Frog)

Approximately eight Green Frogs were observed at both sites 1 and 3. At site 1 auditory observations of four males calling was noted. Four adults were seen at site 3 on the bank of a canal.

9. *Notophthalmus viridescens viridescens* (Red-spotted Newt)

Four Red-spotted Newts were observed in the juvenile eft stage, three at site 1 and one individual at site 2. The three at site 1 were in an upland forest habitat and the one at site 2 was on a hillside leading to a seep. During the pre-survey an eft that was transitioning to an adult was noted at site 1 in a shallow puddle. It had the coloration of both the eft (dorsal) and adult form (ventral) (pictured below).



Reptiles

10. *Carphophis amoenus amoenus* (Eastern Wormsnake)

One Wormsnake was noted under a cover object at site 1 on the path around the Quarry Pond.

11. *Diadophis punctatus edwardsii* (Northern Ring-necked Snake)

Two Northern Ring-necked Snakes were observed under logs at sites 1 and 2. At site 1 it was in an upland habitat and at site 2 it was in a lowland habitat not too far from a seep. Both had a complete “ring” around their necks.



12. *Pantherophis alleghaniensis* (Eastern Ratsnake)

Three Eastern Ratsnakes were observed, one individual at site 1 and two at site 3. The two individuals at site 3 were sunning on the forest floor. One of the individuals at site 3 had a lot of healed scars on its body.

13. *Plestiodon faciatus* (Common Five-lined Skink)

Four Common Five-lined Skinks were noted at site 1 in a large rock pile/outcrop with lots of basking spots. They were observed either basking on the rocks or seeking refuge under the rocks.



14. *Pseudemys concinna concinna* (Eastern River Cooter)

One adult River Cooter was seen swimming in the Quarry Pond at site 1.

15. *Sceloporus undulates* (Eastern Fence Lizard)

Five Eastern Fence Lizards were observed at site 1. One was found under a log in an upland forest habitat. The rest were observed basking on rocky outcrops.

16. *Scincella lateralis* (Little Brown Skink)

Three Little Brown Skinks were observed at site 1. The first individual was found in a grassy floodplain under a log. The other individuals were found under rocks next to a large rocky outcrop.



Discussion

The Quarry Gardens at Schuyler in Nelson County, Virginia was an interesting place to do a herpetological survey. This privately owned land was a soapstone quarry from the late 1800's up until the mid-1940's. The 243 ha of land has a variety of habitats such as upland forests, rocky outcrops, deep quarry lakes, streams, and grasslands. According to the Virginia Herpetological Society's database for Nelson County, 51 species of herpetofauna have been documented: 28 species of amphibian and 23 species of reptiles (VHS Herp Database). Nelson County has been surveyed once before by the Virginia Herpetological Society back in 18-19 May 2001 (Gibson, 2002). This survey covered two different counties in Virginia, Augusta and Nelson Counties. The survey in Nelson County was at Humpback Rocks in the northern, mountainous area of the county at an elevation of 1,021 meters. One amphibian and two reptile species were found: *Notophthalmus viridescens viridescens* (Red-spotted Newt), *Crotalus horridus horridus* (Timber Rattlesnake), and *Storeria occipitomaculata occipitomaculata* (Red-bellied Snake).

E.R. Dunn also surveyed Nelson County for herpetofauna more than 100 years ago in the summers of 1912 - 1914 (Dunn, 1915). Dunn found 33 species of herpetofauna, eight species of amphibians and 25 species of reptiles along the James River (Dunn, 1915). It is interesting to note that four species he found currently have not been documented in Nelson County: *Virginia valeriae valeriae* (Smooth Earthsnake), *Aspidoscelis sexlineata sexlineata* (Six-lined Racerunner), *Kinosternon subrubrum subrubrum* (Eastern Mud Turtle), and *Pseudemys rubriventris* (Northern Red-bellied Cooter); currently the latter is found to the northwest of Nelson County in Augusta County and Waynesboro City (VHS database). The rest are assumed to be in Nelson County. It should also be mentioned that Dunn listed Nelson County as being 64.4 km below Lynchburg (Dunn, 1915), currently Nelson County is 25.6 km northeast of Lynchburg. It is possible that county lines or locations have changed over time.

The Quarry Gardens surveyed a different area than what was previously covered in Nelson County. The Gardens are located in the eastern side of the county at a lower elevation, 150

meters. During the survey conducted on 8 June 2016, 17 species of herpetofauna were documented: nine species of amphibians and eight species of reptiles. Species that we hoped to find were *Opheodrys vernalis* (Smooth Greensnake) which had been found on site before on 11 July 2015 (Devin Floyd pers comm), but not documented as a county record. Since no specimens were found during the survey Devin agreed to submit a note to Catesbeiana (Floyd, 2017).

An individual *E. guttolineata* was found on the bank of a stream at site 2. *Eurycea guttolineata* had not been documented in Nelson County before and this served as a new county record for the species. It was entered into the VHS archives as #427. *Eurycea guttolineata* is found in three counties surrounding Nelson County: Amherst to the southwest, Rockbridge to the west, and Albemarle to the northeast (VHS database). A few *S. lateralis* were also found during this survey which was the second documentation of this species in Nelson County. The first report was by Tom Akre on 2 July 2015 (pers comm), but a voucher was never submitted. The present survey serves as the first voucher, and was entered into the VHS archives as #421. *Scincella lateralis* is thought to be found in counties surrounding Nelson County, but has only been confirmed in Amherst County to the southwest (VHS database). The possible amelanistic *A. a. americanus* that was found during the pre-survey is not common in Virginia (Joe Mitchell, pers comm) and may not have been documented yet in the state. Ongoing research will determine the prevalence of this color abnormality in the United States (Neff et al, in prep).

There are 12 species of herpetofauna, many of which are common species encountered in Virginia and found in nearby counties, but have not yet been confirmed in Nelson County (VHS database). We hoped to encounter some of these species during the survey, but failed to do so. Of these 12 species, two are turtles that have not been documented before: *Sternotherus odoratus* (Eastern Musk Turtle) and *Kinosternon subrubrum subrubrum* (Eastern Mud Turtle). *Sternotherus odoratus* is found north of Nelson County in Albemarle County and to the south in Amherst County (VHS database). *Kinosternon s. subrubrum* is assumed to be found in Nelson County and nearby counties, but has only been documented in Buckingham County to the southeast (VHS database). Both of these turtles prefer shallow, fresh-water pools with vegetation (Martof et al, 1980) which was habitat present at the Quarry Gardens at sites 1, 2, and 3. There are two species of snakes that are assumed to be in Nelson County, but have not been documented yet. *Lampropeltis getula* (Eastern Kingsnake) is found in three counties surrounding Nelson County: Augusta and Albemarle to the north and Buckingham to the east (VHS database). *Lampropeltis getula* is found around woodland areas and under cover objects and sometimes moist areas like swamps and wetlands (Linzey and Clifford, 1981) all of these habitats were present at the sites 1, 2, and 3. *Virginia valeriae valeriae* (Eastern Smooth Earthsnake) is assumed to be found in Nelson County and the counties surrounding it, but has not been documented yet. The closest *V. v. valeriae* has been found to Nelson County is Fluvanna County, 37.1 km to the east and the City of Lynchburg, 67.4 km to the southwest (VHS database). These snakes are seldom seen and are fossorial unless heavy rains bring them to the surface, then they can be encountered under rocks and logs (Linzey and Clifford, 1981). This habitat was seen at all of the sites at the Quarry Gardens.

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There are three salamander species that could be found in Nelson County that have not been documented yet: *Eurycea lucifuga* (Cave Salamander), *Hemidactylium scutatum* (Four-toed Salamander), and *Pseudotriton montanus montanus* (Eastern Mud Salamander). *Eurycea lucifuga* is found in Rockbridge County, to the west of Nelson County, and Amherst to the south (VHS database). *Eurycea lucifuga* is usually restricted to limestone caves, but can be found nearby under rocks next to streams during heavy rains (Martof et al, 1980). While there are no known caves at the Quarry Gardens, suitable habitat exists in other parts of Nelson County. *Hemidactylium scutatum* is assumed to be found state-wide, but has not been documented in Nelson County yet. They are found in Appomattox, Amherst, and Buckingham Counties to the south and Augusta County to the northwest (VHS database). *Hemidactylium scutatum* is found near slow moving seeps and moist upland woodlands with wet logs and leaf litter; they are sometimes associated with sphagnum ponds or bogs which are used as egg laying sites (Mitchell and Gibbons, 2010). *Pseudotriton m. montanus* is found in Augusta County to the west of Nelson County, but none of the other surrounding counties, although its presence is assumed (VHS database). Augusta represents one of the westernmost counties in its range in Virginia and Nelson County would bridge the gap to its range in the eastern part of the state. Other than Augusta, the closest county to Nelson where *P. m. montanus* has been confirmed is Goochland County, 66.4 km to the east (VHS database). The preferred habitat of *P. m. montanus* is muddy, leaf-filled seeps and springs (Petranka, 1998), which is present at site 2.

Four lizard species are assumed to be in Nelson County, but have not been officially documented. They are: *Aspidoscelis sexlineata sexlineata* (Eastern Six-lined Racerunner), *Plestiodon anthracinus anthracinus* (Northern Coal Skink), *Plestiodon inexpectatus* (Southeastern Five-lined Skink), and *Plestiodon laticeps* (Broad-headed Skink). *Aspidoscelis s. sexlineata* is found in three counties around Nelson County: north in Augusta, northeast in Albemarle, and south in Appomattox. *Plestiodon a. anthracinus* is documented in three counties surrounding Nelson County: Augusta and Albemarle to the north and Rockbridge County to the west (VHS database). *Plestiodon inexpectatus* is assumed to be in Nelson County and the surrounding counties, but has yet to be documented in any of them. The closest voucher is two counties to the southeast in Cumberland County and two counties to the southwest in Botetourt County (VHS database). *Plestiodon laticeps* is found in three counties surrounding Nelson County: Rockbridge to the west, Albemarle to the north, and Buckingham to the east (VHS database). All of the aforementioned lizards are usually found under brush, logs, and rocks, and can be seen basking during the day (Mitchell, 1994). Several *P. faciatus* were found onsite and share similar habitat preferences with the four aforementioned lizard species, it can be inferred that those lizards can also exist at the Quarry Gardens.

Although this was a smaller survey in regards to the number of volunteers surveying, when compared to the HerpBlitz or Annual Survey, it was still surprising not to find some common species. Further surveys in Nelson County, Virginia will most likely yield these “hidden” species.

Literature Cited

- Conant, R and J.T. Collins. 1998. A field guide to reptiles and amphibians of Eastern and Central North America. 640 pp.
- Dunn, E.R. 1915. List of Amphibians and Reptiles Observed in the Summers of 1912, 1913, and 1914 in Nelson County, Virginia. Copeia 18: 5-7.
- Gibson, P. 2002. Herpetofaunal Survey of Sherando Lake Recreation Area, Loves Run Pond Complex, Green Pond, and Humpback Rocks. Catesbeiana 22(1): 3-13.
- Fleming, G.R. 2016. Overview of the Physiography and Vegetation of Virginia. Virginia Department of Conservation and Recreation, Division of Natural Heritage. Richmond, Virginia. 54 pp.
- Floyd, D. 2017. *Ophedrys vernalis*, Field Note. Catesbeiana 37(1): 47.
- Linzey, D.W. and M.J. Clifford. 1981. Snakes of Virginia. University of Virginia Press, Charlottesville, Virginia. 173pp.
- Martof, B.S., W.M. Palmer, J.R. Bailey, and J.R. Harrison III. 1980, Amphibians and Reptiles of the Carolinas and Virginia. University of North Carolina Press, Chapel Hill, North Carolina. 264 pp.
- Mitchell, J.C. 1994. The Reptiles of Virginia. Smithsonian Institution Press, Washington, DC. 352 pp.
- Mitchell, J.C. and J.M. Gibbons. 2010. Salamanders of the Southeast. University of Georgia Press, Athens, Georgia. 324 pp.
- Mitchell, J.C. and K.K. Reay. 1999. Atlas of Amphibians and Reptiles in Virginia. Virginia Department of Game and Inland Fisheries, Richmond, Virginia. 122 pp.
- Neff, M., A. Hale, L. Hamilton, B. Balik. 2016. *Eurycea longicauda*, Field Note. Catesbeiana 36(2): 90.
- Neff, M., B. Balik, A. Thieblot, and B. Thieblot. 2017. *Anaxyrus americanus* (American Toad). Abnormal Coloration. Herpetological Review. Manuscript in preparation.
- Petranka, J.W. 1998. Salamanders of the United States and Canada. Smithsonian Institution Press, Washington, DC. 587 pp.

The Quarry Gardens Survey

Smith, R. 8 July 2015. "Schuyler couple turning backyard soapstone quarries into botanical garden". The News and Advance. url: http://www.newsadvance.com/news/local/schuyler-couple-turning-backyard-soapstone-quarries-into-botanical-garden/article_785fac32-25ba-11e5-b74a-23deae08f50f.html

Thomas, S.K. 2010. Soil Survey of Nelson County, Virginia. Virginia Polytechnic Institute and State University, Blacksburg, Virginia. 728 pp.

Tobey, F.J. 1985. Virginia's Amphibians and Reptiles: A Distributional Survey. Virginia Herpetological Society. Purcellville, Virginia. 114 pp.

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A Survey of the Pathogenic Fungus, *Batrachochytrium dendrobatidis*, at the Smithsonian Environmental Research Center, Anne Arundel County, Maryland.

Lauren D. Fuchs^{1†}, Todd A. Tupper^{2*†}, Tina Sephapur², Robert Aguilar³, Christine A. Bozarth²

¹George Mason University
Department of Systems Biology
10900 University Blvd
Manassas, VA 20110

²Northern Virginia Community College
Department of Math, Science, and Engineering
5000 Dawes Avenue
Alexandria, Virginia 22311

³Smithsonian Environmental Research Center
Fish and Invertebrate Ecology Lab
647 Contees Wharf Road
Edgewater, Maryland 21037

*Corresponding author: ttupper@nvcc.edu

†Authors contributed equally to the development of the manuscript

Introduction

Batrachochytrium dendrobatidis (*Bd*) is a pathogenic species of chytrid fungus that produces flagellated, motile spores, which colonize keratinized epithelial cells in the skin of adult amphibians, and keratinized mouthparts of larval amphibians (Rachowicz and Vredenburg, 2004; Brutyn et al. 2012). It has been associated with declines and extirpations in over 200 amphibian species (Lips et al. 2006). Susceptibility to, and outcomes of *Bd* infection vary markedly both within and between species, ranging from no symptoms to mortality (Beebee and Griffiths 2005; Briggs et al. 2010). These inconsistencies are attributed to temperature (Berger et al. 2004), innate defenses (Harris et al. 2006; Woodhams et al. 2007), habitat (Kriger and Hero 2007; Rowley and Alford 2007), and host life history traits (Lips et al. 2003). Although *Bd* is found in a wide range of habitats and climates (Kilpatrick et al. 2010), catastrophic declines associated with *Bd* typically occur in cool, wet, and thermally consistent locations (Bielby et al. 2008; Murray et al. 2011; Berger et al. 2016). Such declines have been documented in Eastern Australia, Central America, and Europe (Berger et al. 1998; Lannoo et al. 2011; Johnson and Speare, 2003). In North America, observed declines have been restricted to the Western region of the United States (Longcore et al. 2007; Murray et al. 2009), with few *Bd*-related die-offs reported east of the Rocky Mountains (Petersen et al. 2016).

Studies in North America are generally sparse and opportunistic, showing inconsistencies in climatic determinants of *Bd* infectivity (Savage et al. 2011). Throughout the eastern United States, numerous studies (see Davidson and Chambers 2011; Huang and Wilson 2013; Lannoo et al. 2011; Longcore et al. 2007; Oullett et al. 2004; Peterson et al. 2016; Tupper et al. 2011) have identified the persistence of *Bd* in amphibians without associated population declines (Caruso and Lips 2013; Daszak et al. 2003; Muletz et al. 2014; Rothermel 2008). However, the mechanisms influencing

the virulence of *Bd*, are poorly understood. A better understanding of its distribution and prevalence among amphibians is necessary to assess the potential threat of *Bd* on local amphibian populations (Daszak et al. 2003). To the best of our knowledge, *Bd* data from the Mid-Atlantic are limited; there are only two prior *Bd* studies conducted in Maryland (Grant et al. 2008; Hossack et al. 2010), and none have focused solely on anurans. Here we assessed the prevalence of *Bd* in anuran species at the Smithsonian Environmental Research Center (SERC), in Anne Arundel County, Maryland. Our primary objective was to assess the prevalence of *Bd* among anurans, thus enhancing existing, but limited information on *Bd* in Maryland. We also aimed to determine if *Bd* was confined to anurans of particular ecological guilds (Kriger and Hero 2007; Longcore et al. 2007; Tupper et al. 2011).

Methods

We opportunistically sampled for *Bd* at the Smithsonian Environmental Research Center (hereafter SERC; 38°53'17.41"N 76°33'15.52 W), in Anne Arundel County, Maryland (for more about SERC see Tupper et al. 2016) between 27 March and 27 June 2014 and 2015. We hand captured (while wearing new nitrile gloves) anurans and assayed skin surfaces via methods described by Hyatt et al. (2007) using sterile dry swabs (no. MW113, Medical Wire and Equipment Company, Durham, NC). We placed skin swabs in 1.5 mL microcentrifuge tubes, which were then frozen until molecular analyses. We followed the Purification of Total DNA from Animal Tissues protocol (Qiagen® DNeasy Blood & Tissue Kit, Valencia, CA) to extract DNA. To detect *Bd*, we prepared a 20 µL PCR reaction with 10 µL Sso Advanced™ universal probes supermix (Bio-Rad, Hercules, CA), 200 nM each primer (ITS1-3Chytr and 5.8sChytr; Boyle et al. 2004), 250 nM MGB probe, and 2 µL of extracted DNA. We ran samples on a CFX96 Touch™ Real-Time PCR Detection System (Bio-Rad, Hercules, CA) at 95°C for 3 min, followed by 45 cycles of 95°C for 30-sec and 55°C for 45-sec. We used positive and negative controls in DNA extraction and PCR amplification. Our goal was to determine the presence (not infection intensity) of *Bd*. Therefore, only one standard concentration was required as a positive control. We conducted qPCR analyses in triplicate on each sample to confirm a positive result. We considered a sample positive if it began to fluoresce before 40 cycles of our PCR reaction on at least two occasions. We used a Fisher's Exact test (Zar 2005) to assess differences in *Bd* detection rates between two broad ecological guilds of anurans: terrestrial/arboreal and aquatic (Table 1; Tupper et al. 2011) in minitab version 17 (www.minitab.com). All nomenclature corresponds with Crother (2012).

Results

We opportunistically sampled 116 individuals across 11 species for *Bd*. Sixty-three (54.3 %) of the samples were collected in 2014 and 53 (45.7 %) were collected in 2015. Due to the opportunistic sampling scheme, sampling was not consistent between months and the monthly sampling distribution was not consistent between years. When pooled across years, five (4.3 %), 47 (40.5 %), 25 (21.6 %) and 39 (33.6 %) of the samples were collected in March, April, May and June, respectively. Seven of the 11 (63.6 %) species sampled tested positive for *Bd*, but only 12 of 116 (10.3 %) of the total samples contained *Bd*. Nine (75 %) of the positive detections were from 2014, and three (25 %) were collected in 2015. Six (50 %), three (25 %), and three (25 %) of the *Bd* positive samples were collected in May, June, and April, respectively. The largest proportion of detections (25%) occurred in the Pickerel Frog (*Lithobates palustris*) and Southern Leopard Frog (*Lithobates sphenoccephalus*). The Eastern Cricket Frog (*Acris crepitans*) had the next largest detection rate (22 %). *Bd* was also detected in the American Bullfrog (*Lithobates catesbeianus*; 16.7 %) and Green Frog (*Lithobates clamitans*; 10.5 %). We also identified *Bd* in Cope's Gray Treefrog (*Hyla chrysoscelis*) and American Toads (*Anaxyrus americanus*; < 1%). The Spring Peeper (*Pseudacris crucifer*), Eastern Spadefoot (*Scaphiopus holbrookii*), Wood Frog (*Lithobates sylvaticus*) and Gray Treefrog (*Hyla versicolor*) were

all *Bd* negative (Table 1). Significantly more detections of *Bd* occurred in the aquatic guild (16.9%; $N = 59$) than in the terrestrial and arboreal guild (0.04%; $N = 57$; Fisher's exact test $P < 0.05$).

Discussion

Although we detected *Bd* in 63.6 % of species sampled, the detection rate across individuals was low (10.3 %), and we did not observe visual signs of chytridiomycosis, the diseased state as a result of *Bd* infection (Muths et al. 2008). Our results are similar to studies conducted throughout the eastern United States, which have documented *Bd* in a wide range of amphibian species generally absent of clinical signs of chytridiomycosis (Grant et al. 2008; Pullen et al. 2010), and without associated catastrophic declines (Lannoo et al. 2011; Longcore et al. 2007; Petersen et al. 2016; Rothermel et al. 2008). Our work is also similar to other studies in that *Bd* was primarily detected in aquatic species but was not restricted to fully aquatic species (Longcore et al. 2007; Pearl et al. 2007; Rodriguez et al. 2009; Tupper et al. 2011). However, our results differ in terms of detection rates: we found one of the lowest detection rates across anuran species in the eastern United States (Davidson and Chambers 2011; Huang and Wilson 2013; Lannoo et al. 2011; Longcore et al. 2007; Petersen et al. 2016; Rothermel et al. 2008; Tupper et al. 2011; Table 2), the lowest in Maryland and, with the exception of Augustine and Neff (2016), the lowest detection rates when compared to similar studies conducted throughout Virginia. These comparisons include sites at the nearby Chesapeake and Ohio National Historic Park, Montgomery County, Maryland, and Huntley Meadows Park, Fairfax County, Virginia (Davidson and Chambers 2011; Grant et al. 2008; Goodman and Ararso 2012; Pullen et al. 2010; Hughey et al. 2014; Tupper et al. *in progress*). Results from Long Branch Nature Center, Arlington County, Virginia (Augustine and Neff 2016) must be interpreted cautiously, as the sample size was low ($N = 25$). In addition, sampling only spanned five genera and six species, with just three anuran species represented ($N = 11$).

Despite increased *Bd* sampling efforts in the eastern United States, certain areas still remain insufficiently surveyed (Olson et al. 2013; GBDMP 2016). In addition to our study, only two other studies have investigated *Bd* in amphibians of Maryland (Grant et al. 2008; Hossack et al. 2010) and only Grant et al. (2008) sampled anurans. Grant et al. (2008) had a notably lower sample size ($N = 53$) than the present study, and only sampled three species (American Bullfrog, Pickerel Frog, and Green Frog) within a single genus (*Lithobates*). Therefore, our data add considerably to the understanding of *Bd* prevalence in Maryland across a wide range of anurans.

Although the presence of *Bd* throughout the eastern United States is well documented, it has yet to be associated with declines (Longcore et al. 2007; Grant et al. 2008; Pullen et al. 2010; Rothermel et al. 2008). Nevertheless, data implicate *Bd* as a primary source of certain dramatic amphibian declines worldwide (Berger et al. 1998; Collins and Crump 2009; Skerratt et al. 2007; Talley et al. 2015). The enigmatic nature of these declines stems from difficulties in demonstrating a causative link between disease and decline (Daszak et al. 2003). This difficulty is due to complex host-pathogen dynamics, and co-existing stressors (i.e. pollution, introduced species, increased UVB-radiation, and climate change) that may be implicated independently, or in conjunction with the pathogen (Beebee and Griffiths 2005). The extent to which each of these factors interacts with, and compounds the effects of *Bd* at the individual, community, and population level is not thoroughly understood, and hypotheses explaining these interactions are controversial (Blaustein et al. 2011). Our ability to interpret these complex interactions, and identify the potential threat of *Bd* on local amphibian populations relies heavily on continued surveillance, both at new and existing locations. We therefore recommend continued *Bd* monitoring using heightened biosecurity protocols (VHS 2016) at SERC and throughout the region.

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Table 1. Number and proportion of *Bd* positives by species at the Smithsonian Environmental Research Center. Superscript numbers following species are ecological guilds. 1 = terrestrial/arboreal, and 2 = aquatic. N = sample size.

Species	N	<i>Bd</i> Positive	% Positive
American Bullfrog ²	6	1	17
American Toad ¹	21	1	5
Cope's Gray Treefrog ¹	14	1	7
Eastern Cricket Frog ¹	18	4	22
Eastern Spadefoot ¹	8	0	0
Gray Treefrog ¹	1	0	0
Green Frog ²	19	2	11
Pickerel Frog ²	8	2	25
Southern Leopard Frog ²	4	1	25
Spring Peeper ¹	13	0	0
Wood Frog ²	4	0	0

Table 2. Proportion of *Bd* detections in anuran species sampled throughout Maryland and Virginia between 2008 and 2017. A range for % *Bd* Positive indicates that data were presented as percentages per species and site. * = Bedford, Campbell, Craig, Giles, Lynchburg City, Montgomery and Richmond City Counties. ** = Buckingham, Charles City, and Henrico Counties. N = Sample size.

Study	Location	N	% <i>Bd</i> Positive
Augustine & Neff 2016	Arlington County, VA	11	0
Davidson & Chambers 2011	Wise County, VA	41	14.6
Goodman & Ararso 2012	Prince Edward County, VA	103	7.8
Grant et al. 2008	Montgomery County, MD	53	17
Hughey et al. 2014	Throughout Western VA*	292	0-92
Present Study	Anne Arundel County, MD	116	10
Pullen et al. 2011	Throughout Central VA**	740	14.1

Literature Cited

- Augustine, L., and M. Neff. 2016. Determining the prevalence of amphibian chytrid fungus (*Batrachochytrium dendrobatidis*) and Ranavirus at Long Branch Nature Center in Arlington, Virginia. *Catesbeiana* 36: 35–42.
- Beebee, T. J. C., and R. A. Griffiths. 2005. The amphibian decline crisis: A watershed for conservation biology? *Biological Conservation* 125: 271–281.
- Berger, L., R. Speare, P. Daszak, D. E. Green, A. A. Cunningham, C. L. Goggin, R. Slocombe, M. A. Ragan, A. D. Hyatt, K. R. McDonald, H. B. Hines, K. R. Lips, G. Marantelli, and H. Parkes. 1998. Chytridiomycosis causes amphibian mortality associated with population declines in the rain forests of Australia and Central America. *Proceedings of the National Academy of Sciences of the United States of America* 95, 9031–9036.
- Berger, L., R. Speare, H. B. Hines, G. Marantelli, A. D. Hyatt, K. R. McDonald, L. F. Skerratt, V. Olsen, J. M. Clarke, G. Gillespie, M. Mahony, N. Sheppard, C. Williams, and M. J. Tyler. 2004. Effect of season and temperature on mortality in amphibians due to chytridiomycosis. *Australian Veterinary Journal* 82: 31–36.
- Berger, L., A. A. Roberts, J. Voyles, J. E. Longcore, K. A. Murray, L. F. Skerratt. 2016. History and recent progress on chytridiomycosis in amphibians. *Fungal Ecology* 19: 89–99.
- Bielby, J., N. Cooper, A. A. Cunningham, T. W. J. Garner, and A. Purvis. 2008. Predicting susceptibility to future declines in the world's frogs. *Conservation Letters* 1: 82–90.
- Blaustein A. R., B. A. Han, R. A. Relyea, P. T. Johnson, J. C. Buck, S. S. Gervasi, and L. B. Kats. 2011. The complexity of amphibian population declines: understanding the role of cofactors in driving amphibian losses. *Annals of the New York Academy of Sciences* 1223: 108–119. doi: 10.1111/j.1749–6632.2010.05909.x.
- Boyle D.G., D.B. Boyle, V. Olsen, J.A.T. Morgan, and A.D. Hyatt. 2004. Rapid quantitative detection of chytridiomycosis (*Batrachochytrium dendrobatidis*) in amphibian samples using real-time Taqman PCR assay. *Diseases of Aquatic Organisms* 60:141–148.
- Briggs, C. J., A. R. Knapp, and V. T. Vredenburg. 2010. Enzootic and epizootic dynamics of the chytrid fungal pathogen of amphibians. *Proceedings of the National Academy of Sciences of the United States of America* 107: 9695–9700. <http://doi.org/10.1073/pnas.0912886107>
- Brutyn, M., K. D'Herde, M. Dhaenens, P. Van Rooij, E. Verbrugghe, A. D. Hyatt, S. Croubels, D. Deforce, R. Ducatelle, F. Haesebrouck, A. Martel, and F. Pasmans. 2012. *Batrachochytrium dendrobatidis* zoospore secretions rapidly disturb intercellular junctions in frog skin. *Fungal Genetics and Biology* 49: 830–837.
- Caruso, N. M., and K. R. Lips. 2013. Truly enigmatic declines in terrestrial salamander populations in Great Smoky Mountains National Park. *Diversity and Distributions* 19: 38–38.
- Collins, J. P., and M. L. Crump. 2009. *Extinction in our times: global amphibian declines*. Oxford University Press, Oxford.

- Crother, B. I. 2012. Scientific and standard English names of amphibians and reptiles of North America North of Mexico, pp. 1–92, SSAR Herpetological Circular 39.
- Daszak, P., A. A. Cunningham, and A. D. Hyatt. 2003. Infectious disease and amphibian population declines. *Diversity and Distributions* 9: 141–150.
- Davidson, S. R. and D. L. Chambers. 2011. Occurrence of *Batrachochytrium dendrobatidis* in amphibians of Wise County, Virginia, USA. *Herpetological Review* 42: 214–216.
- GBDMP (Global *Bd*-Mapping Project- *Bd*-Maps). 2016. http://www.bdmmaps.net/surveillance/s_country.asp. (Accessed 3 June 2016).
- Goodman, R.M., and Y.T Ararso. 2012. Survey of ranvirus and the fungus *Batrachochytrium denodrobatidis* in frogs of central Virginia, USA. *Herpetological Review* 43:78–80.
- Grant, E. H. C., L. L. Bailey, J. L. Ware, and K. L. Duncan. 2008. Prevalence of the amphibian pathogen *Batrachochytrium dendrobatidis* in stream and wetland populations in Maryland, USA. *Applied Herpetology* 5: 233–241.
- Harris, R. N., T. Y. James, A. Lauer, M. A. Simon, and A. Patel. 2006. Amphibian pathogen *Batrachochytrium dendrobatidis* is inhibited by the cutaneous bacteria of amphibian species. *EcoHealth* 3:53–56.
- Hossack, B. R., M. J. Adams, E. H. C. Grant, C. A. Pearl, J. B. Bettaso, W. J. Barichivich, W. H. Lowe, K. True, J. L. Ware, and P. S. Corn. 2010. Low prevalence of chytrid fungus (*Batrachochytrium denodrobatidis*) in amphibians of U.S. headwater streams. *Journal of Herpetology* 44: 253–260.
- Huang, R. and L. A. Wilson. 2013. *Batrachochytrium denodrobatidis* in amphibians of the Piedmont and Blue Ridge provinces in northern Georgia, USA. *Herpetological Review* 44: 95–98.
- Hughey, M.C., M.H. Becker, J.B. Walke, M.C. Swartwout, and L. K. Belden. 2014. *Batrachochytrium denodrobatidis* in Virginia amphibians within and among site variation in infection. *Herpetological Review* 45:428–438.
- Hyatt, A. D., D. G. Boyle, V. Olsen, D. B. Boyle, L. Berger, D. Obendorf, A. Dalton, K. Kriger, M. Hero, H. Hines, R. Phillott, R. Campbell, G. Marantelli, F. Gleason, and A. Colling. 2007. Diagnostic assays and sampling protocols for the detection of *Batrachochytrium dendrobatidis*. *Diseases of Aquatic Organisms* 73:175–192.
- Johnson, M. L. and R. Speare. 2003. Survival of *Batrachochytrium dendrobatidis* in water: quarantine and disease control implications. *Emerging Infectious Diseases* 9:922–925.
- Kilpatrick, A. M., C. J. Briggs, and P. Daszak. 2010. The Ecology and impact of chytridiomycosis: an emerging disease of amphibians. *Trends in Ecology and Evolution* 25: 109–118.

- Kruger, K. M., and J M. Hero. 2007. The chytrid fungus *Batrachochytrium dendrobatidis* is non-randomly distributed across amphibian breeding habitats. *Divers Distrib.* 13:781–788.
- Lannoo, M. J., C. Petersen, R. E. Lovich, P. Nanjappa, C. Phillips, J. C. Mitchell, and I. Macallister. 2011. Do frogs get their kicks on Route 66? Continental U.S. Transect reveals spatial and temporal patterns of *Batrachochytrium dendrobatidis* infection. *PLoS ONE* 6: e22211. doi: 10.1371/journal.pone.0022211
- Lips, K. R., J. D. Reeve, and L. R. Witters. 2003. Ecological traits predicting amphibian population declines in Central America. *Conservation Biology* 17:1078–1088.
- Lips, K. R., F. Brem, R. Brenes, J. D. Reeve, R. A. Alford, J. Voyles, C. Carey, L. Livo, A.P. Pessier, and J. P. Collins. 2006. Emerging infectious disease and the loss of biodiversity in a Neotropical amphibian community. *Proceedings of the National Academy of Sciences of the United States of America* 103: 3165–3170.
- Longcore, J. R., J. E. Longcore, A. P. Pessier, and W. A. Halteman. 2007. Chytridiomycosis widespread in anurans of northeastern United States. *Journal of Wildlife Management* 71: 435–444.
- Muletz, C., N. M. Caruso, R. C. Fleischer, R. W. McDiarmid, and K. R. Lips. 2014. Unexpected rarity of the pathogen *Batrachochytrium dendrobatidis* in Appalachian *Plethodon* salamanders: 1957–2011. *PLoS ONE* 9(8): e103728. doi: 10.1371/journal.pone.0103728
- Murray, K. A., D. Rosauer, H. McCallum, and L. F. Skerratt. 2011. Integrating species traits with extrinsic threats: closing the gap between predicting and preventing species declines. *Proceedings of the Royal Society B: Biological Sciences* 278: 1515–1523.
- Muths, E., D. S. Pilliod, and L. J. Livo. 2008. Distribution and environmental limitations of an amphibian pathogen in the Rocky Mountains, USA. *Biological Conservation* 141: 1484–1492.
- Olson, D. H., D. M. Aanensen, K. L. Ronnenberg, C. I. Powell, S. F. Walker, J. Bielby, T. W. J. Gerner, G. Weaver, The Bd Mapping Group, and M. C. Fisher. 2013. Mapping the global emergence of *Batrachochytrium dendrobatidis*, the amphibian chytrid fungus. *PLoS ONE* 8(2): e56802. doi: 10.1371/journal.pone.0056802.
- Oullet, M., I. Mikaelian, B. D. Pauli, J. Rodriguez, and D. M. Green. 2005. Historical evidence of widespread chytrid infection in North American amphibian populations. *Conservation Biology* 19: 1431–1440.
- Pearl, C. A., E. L. Bull, D. E. Green, J. Bowerman, M. J. Adams, A. Hyatt, and W. H. Wente. 2007. Occurrence of the amphibian pathogen *Batrachochytrium dendrobatidis* in the Pacific Northwest. *Journal of Herpetology*. 41:145–149.
- Petersen, C. E., R. E. Lovich, C. A. Phillips, M. J. Dreslik, and M. J. Lannoo. 2016. Prevalence and seasonality of the amphibian chytrid fungus *Batrachochytrium dendrobatidis* along widely separated longitudes across the United States. *EcoHealth* pp 1-15. DOI 10.1007/s10393-016-1101-4.

- Pullen, K. D., A. M. Best, and J. L. Ware. 2010. Amphibian pathogen *Batrachochytrium dendrobatidis* prevalence is correlated with season and not urbanization in central Virginia. *Diseases of Aquatic Organisms* 91: 9–16.
- Rachowicz, L. J. and V. T Vredenburg. 2004. Transmission of *Batrachochytrium dendrobatidis* within and between amphibian life stages. *Diseases of aquatic organisms* 61: 75–83.
- Rodriguez, E. M., T. Gamble, M. V. Hirt, and S. Cotner. 2009. Presence of *Batrachochytrium dendrobatidis* at the headwaters of the Mississippi River, Itasca State Park, Minnesota, USA. *Herpetological Review* 40:48–50.
- Rothermel, B. B., S. C. Walls, J. C. Mitchell, C. K. Dodd Jr., L. K. Irwin, D. E. Green, V. M. Vasquez, J. W. Petranksa, and D. J. Stevenson. 2008. Widespread occurrence of the amphibian chytrid fungus *Batrachochytrium dendrobatidis* in the southeastern USA. *Diseases of Aquatic Organisms* 82: 3–18.
- Rowley, J. J. and R. A. Alford. 2007. Behaviour of Australian rainforest stream frogs may affect the transmission of chytridiomycosis. *Diseases of Aquatic Organisms* 77: 1–9.
- Savage, A. E., M. J. Sredl, and K. R. Zamudio. 2011. Disease dynamics vary spatially and temporally in a North American amphibian. *Biological Conservation* 144: 1910–1915.
- Skerratt, L.F., L. Berger, R. Speare, S. Cashins, K. R. McDonald, A.D. Phillott, H. B. Hines, and N. Kenyon. 2007. Spread of chytridiomycosis has caused the rapid global decline and extinction of frogs. *EcoHealth* 4: 125–134.
- Talley, B. L., C. R. Muletz, V. T. Vredenburg, R. C. Fleischer, and K. R. Lips. 2015. A century of *Batrachochytrium dendrobatidis* in Illinois amphibians (1888–1989). *Biological Conservation* 182: 254–261.
- Tupper, T.A. J.W. Streicher, S.E. Greenspan, B.C. Timm. 2011 and R.P Cook. Detection of *Batrachochytrium dendrobatidis* in anurans of Cape Cod National Seashore, Barnstable County, Massachusetts, USA. *Herpetological Review* 42: 62–65.
- Tupper, T. A., R. Aguilar, T. Sepahpur, C. Hay, and S. Ebrahimi. 2016. A survey of amphibians at the Smithsonian Environmental Research Center, Anne Arundel County, Maryland. *Banisteria* 46: 12–24.
- Tupper, T.A., L.D. Fuchs, C. Love, D. Lawlor and C.A. Bozarth. In progress. A survey of *Batrachochytrium dendrobatidis* at Huntley Meadows Park in Fairfax County, Virginia.
- VHS (Virginia Herpetological Society). 2016. Infectious diseases of our native herps and disinfection protocols. <http://virginiaherpetologicalsociety.com/disease/index.htm>. Accessed May 2016.
- Woodhams, D. C., K. Ardipradja, R. A. Alford, G. Marantelli, L. K. Reinert, and L. A. Rollins-Smith. 2007. Resistance to chytridiomycosis varies among amphibian species and is correlated with skin peptide defenses. *Animal Conservation* 10: 409–417.
- Zar, J. H. 2010. *Biostatistical Analysis*. 5th Edition. Prentice Hall, New York, NY. 960 pp.

The New Kent County, Virginia Timber Rattlesnake
(*Crotalus horridus*) Locality is Invalid

Joseph C. Mitchell
Florida Museum of Natural History
University of Florida
Gainesville, FL 32611

On 18 September 2002, an adult *Crotalus horridus* (Timber Rattlesnake) was discovered dead on St. Rt. 606, 4.3 km ESE Old Church, New Kent County, VA by a local citizen and given to the Virginia Department of Game and Inland Fisheries. I was asked to verify its identification and preserve the specimen for donation to the Smithsonian Institution's Department of Amphibians and Reptiles. This specimen (USNM 559001) putatively confirmed the historical occurrence of *C. horridus* in eastern Virginia. The location was adjacent to a wooded area containing ravines leading to Putney's Mill Creek, a tributary of the Pamunkey River. At the time, there was no evidence to suggest it was not valid. I published the distribution record in Herpetological Review (Mitchell, 2003).

In spring 2005, I learned from a local resident who lived within two km of the specimen's location, that its occurrence was part of a prank. He said that he had previously collected the *C. horridus* as a road-kill in eastern North Carolina. He and a friend had placed the partially frozen DOR on the edge of the road to fool a friend who was interested in snakes. Thus, the location information for USNM 559001 is invalid.

Inaccurate information about museum specimens occasionally become imbedded in the scientific literature and remain uncorrected for many years. For example, Mitchell (1989) reviewed the convoluted history in the literature of a "Bog Turtle" specimen (USNM 95195) collected in Fairfax County, VA (date unknown). At the time, it was identified as *Clemmys* (*Glyptemys*) *muhlenbergii*. M.K. Brady published the location in Copeia (Brady, 1924). Most authors did not question its correct identity, although Music (1972) questioned its occurrence in the Coastal Plain. It was not until 65 years later that its identity was finally established (Mitchell, 1989). The specimen is a juvenile *Glyptemys insculpta*, a species known to occur in Fairfax County (Mitchell and Reay, 1999). Specimens in museum collections such as the two mentioned in this note allow us to verify those with suspect identifications. Although photographs usually allow correct identifications, museum specimens are the only way to obtain uncontested verifications.

Literature Cited

Brady, M.K. 1924. Muhlenberg's turtle near Washington. Copeia (135):92.

Mitchell, J.C. 1989. An historical review of the Fairfax County, Virginia, bog turtle record. Catesbeiana 9:3–7.

- Mitchell, J.C. 2003. Geographic distribution: *Crotalus horridus* (Timber Rattlesnake). Herpetological Review 34:387.
- Mitchell, J.C., and K. Reay. 1999. *Atlas of Amphibians and Reptiles in Virginia*. Special Publication Number 1, Virginia Department of Game and Inland Fisheries, Richmond, VA. 122 pp.
- Music, J.A. 1972. Herptiles of the Maryland and Virginia Coastal Plain. Pp. 213–243 in M.L. Wass (editor), A Checklist of the Biota of the Lower Chesapeake Bay. Virginia Institute of Marine Science, Scientific Report 65, Gloucester.

Field Notes

***Ambystoma maculatum* (Spotted Salamander)** VA: Spotsylvania County, Fawn Lake (Latitude: 38-15'24" N, Longitude: 077-42'53" W). 24 January 2017. John J. Jackson

County Record: This is the first verified sighting of a Spotted Salamander in Spotsylvania County, VA, although it has appeared in all surrounding counties. The specimen was netted in a residential swimming pool at about 0830h in the morning. The air temperature was 3 °C; the water temperature was estimated to be 5-7 °C. The specimen was netted in about five feet of water. Once recovered, the specimen was released in a wooded area (deciduous and mixed trees), digitally photographed, with the photograph forwarded to the VHS species identification site for positive identification. The salamander was approximately seven inches in length.

The Spotted Salamander is native to Virginia but this is the first recorded instance of this species in Spotsylvania County, VA. The location of the recovery is about 1.5 km from Fawn Lake itself, in an area of residential properties, each of which abut various drainages into the lake. It had been raining steadily for the three days prior to the recovery of the salamander. Numerous other species of salamanders and frogs have been recovered from this same residential pool over the past five years. A digital photograph of the salamander was deposited in the VHS Archive (#425) as a voucher.

John J. Jackson

10703 Cedar Creek Drive,
Spotsylvania, VA, 22551



***Ambystoma tigrinum tigrinum* (Eastern Tiger Salamander)** VA: Westmoreland County.
16 March 2016. Exact location intentionally withheld. John D. Kleopfer.

County Record: In Virginia, the Eastern Tiger Salamander (*Ambystoma tigrinum tigrinum*) has only been documented in Augusta, Nelson, Mathews, York and Isle of Wight counties (Virginia Fish and Wildlife Information System database). Although Hanover County is listed as a county occurrence, this record is unsubstantiated (Terwilliger, K. 1991. Virginia's Endangered Species. The McDonald and Woodward Publishing Company. Blacksburg, Virginia. 672 pp.). The York County record is based on a single specimen and no breeding site has ever been identified.

On 16 March 2015, a landowner in Westmoreland County overturned a horse trough and found what she believed was a "lizard". A photograph was submitted to the Virginia Herpetological Society and it was identified as an Eastern Tiger Salamander. Based on its swollen appearance, it appeared to be a gravid female. On 11 March 2016, the author met with the landowner in hopes of finding a breeding site. The landowner was unaware of any bodies of water in the immediate area, but did refer to a heavily forested area across the highway (~400m east-northeast) where she often heard frog choruses. Investigating the area resulted in finding what appeared to be an old mill pond (~0.5 ha or 1 acre). Much of the pond was less than a meter in depth with an open canopy and an abundance of submerged aquatic vegetation. A brief survey (~30 minutes) resulted in the discovery of more than 12 Ambystomid egg masses, some of which appeared to be Spotted Salamander (*Ambystoma maculatum*). An additional survey on 16 February 2017 revealed more than 50 Eastern Tiger Salamander egg masses in the mill pond, confirming the site as a breeding site. This is also the only known artificially created breeding site in Virginia. A photograph of the adult salamander has been deposited in the VHS archives (#360). Because the Eastern Tiger Salamander is State Endangered and a Tier II Species of Greatest Conservation Concern in Virginia's Wildlife Action Plan, any new breeding sites are critical to the conservation of the species.

John (J.D.) Kleopfer

Virginia Department of Game and Inland Fisheries
3801 John Tyler Highway
Charles City, Va. 23030



***Desmognathus monticola* (Seal Salamander)** VA: Clarke Co., 4 km west of Paris (39° 00' 36.93" N 77° 59' 19.34" W). 27 Oct. 2016. Greg Zell

County Record: During a hunting trip near Paris, VA on private property near the outflow of a first order freshwater stream at an elevation of 300 m. a number of salamanders were found. The riparian zone was characterized by a variety of wetland flora and an abundance of exposed rocks and boulders. A Seal Salamander was collected by hand, photographed and released. Several specimens of *Eurycea bislineata* (Northern Two-lined Salamander), *Pseudotriton ruber ruber* (Northern Red Salamander) and *Plethodon cinereus* (Eastern Red-backed Salamander) were also found at the same site on the same date. This find is the first report of a Seal Salamander from Clarke County, although they have been reported from Warren and Fauquier Counties to the south and Loudoun County to the east. Digital photos were deposited with the VHS Archive (#409) as a voucher.

Greg Zell
10914 Decatur Dr.
Fairfax, VA 22030



***Hemidactylum scutatum* (Four-toed Salamander)** VA., Amherst County, Shepp Pond, George Washington National Forest (N 37° 36' 44.1"; W 79° 23' 10.6"), 4 March 2017. Tom Holman, Kyle Harris, Gail Starks and Paul Sattler.

County Record: On the evening of 27 February 2017 one of the authors (TH) led a Liberty University Biology Club hike up to Shepp Pond in Amherst County to view Spotted Salamander breeding. In addition to seeing Spotted Salamanders, two Four-toed Salamanders were also uncovered under logs overlying patches of sphagnum moss. The moss was in a currently dry vernal pool adjacent to Shepp Pond. Because a large group of students was being overseen, photographs of the specimens were not obtained. On 4 March 2017 PS and GS went to Shepp Pond for the purpose of obtaining photographs of Four-toed Salamanders. Two specimens were uncovered, also under logs overlying sphagnum moss. We do not know if these are the same or different specimens. Digital photographs were obtained and represent the first vouchers for Amherst County. On 7 March KH led a student class to Shepp Pond and saw three Four-toed Salamanders. Thus, a good population of salamanders must exist at this site. This find is not unexpected since specimens have been found just over the border in adjacent Bedford County along the Blue Ridge Parkway. Digital photos were placed in the VHS Archive (#415) as a voucher.

Tom Holman, Kyle Harris and Paul Sattler
Liberty University
Biology Department
Lynchburg, VA

Gail Starks
University of Vermont
Burlington, VT



***Heterodon platirhinos* (Eastern Hog-nosed Snake)** VA: Nelson County, The Quarry Gardens at Schuyler (37° 46' 42.12"N; 78° 42' 27.24"W) 26 August 2016. Rachel Bush and Devin Floyd.

Unusual Coloration: On 26 August 2016 I found an unusually brightly colored Eastern Hog-nosed Snake on the east side of the quarry road that circumnavigates the “south quarry”, about 50 m south of the Quonset hut. I was tracking a butterfly (hairstreak spp.) along the edge of a pine-dominated mafic woodland with my partner, Rachel, when she spotted the snake directly in the path of my movement. She offered a warning yell that preventing me from stepping on it. We captured a video of its initial warning behavior (including exhibition of head and neck pattern and inhale/exhale deflation hissing sounds). Photographs were taken from several angles with a Cannon Powershot SX710HS camera before we departed, leaving the snake as we found it. Original images were cropped to reduce the size (VHS Archive #419).

We estimated the snake to be 10-12 cm in length and its patterning was unusually bold, including white, cream, and black banding over a field of bold reddish-orange. Identification was confirmed using the Virginia Herpetological Society Website and Martof (B.S., Palmer W.M., Bailey J.R., Harrison J.R. III 1980. *Amphibians & reptiles of the Carolinas and Virginia*. University of North Carolina Press, Chapel Hill, NC 264 pp.). This observation was made in an area about 200 feet northeast of the “Nelson County First” observation for *Opheodrys vernalis* (Smooth Green Snake) (Floyd, D. *Opheodrys vernalis* Catesbeiana 37(1):47.).

Devin Floyd

Center for Urban Habitats
187 Bryan Court
Charlottesville, Va. 22902



Field Notes

***Opheodrys vernalis* (Smooth Greensnake)** VA: Nelson County, The Quarry Gardens at Schuyler (37° 46' 42.49"N; 78° 42' 29.47"W) July 8, 2015. Rachel Bush and Devin Floyd.

County Record: While preparing for trail installation along the southeast rim of the south quarry, Rachel Bush spotted a small and slender green snake. The snake was captured for closer inspection and then released again within 5 minutes at the point of capture. Two photographs were taken with a Cannon Powershot SX710HS camera.

The smooth green snake was about 40 cm long and slender with smooth dorsal scales. It was found on the ground in an area with a dominant ground cover of mosses and lichen and a canopy of mostly *Pinus virginiana*. This portion of the Quarry and the areas to the south and west have cool microclimates, thus hosting flora species more typical of higher elevations (including mountain bellwort). It may be possible that this area provides refuge for outlying animal species, in addition to disjunct Blue Ridge plants, allowing for a species such as the smooth green snake to maintain reproducing colonies. The Smooth Greensnake has been reported from Albemarle and Augusta Counties to the north and Amherst County to the south, but this is the first record from Nelson County. A digital photo was deposited in the VHS Archive (#420) as a voucher.

Devin Floyd

Center for Urban Habitats
187 Bryan Court
Charlottesville, Va. 22902



***Lampropeltis getula* (Eastern Kingsnake):** VA, Amherst County, Blackwater Bike Trail approximately 60 m from the James River. 24 November 2016. Will Sigler.

County Record: On 24 November 2016 at approximately 1500h I encountered an Eastern Kingsnake on the Blackwater Bike Trail about 60m from the James River. It was just over a meter in length and I took a photograph of the snake. Upon checking the VHS Website, I noticed that Eastern Kingsnakes were not reported for Amherst County. Toby (1085. Virginia's Amphibians and Reptiles: A Distributional Survey. Virginia Herpetological Survey, Purcellville, VA. 114 pp) includes a record for Amherst County but according to Mitchell (1994. The Reptiles of Virginia. Smithsonian Institution Press, Washington DC.352 pp.) there is no voucher. This find thus represents the first documented occurrence of the Eastern Kingsnake in Amherst County, although they are reported for Bedford County to the west and Campbell County to the south. A digital photo was deposited in the VHS Archive as a voucher (# 412).

Will Sigler



Field Notes

***Thamnophis sirtalis sirtalis* (Eastern Gartersnake)** VA: Sussex Co., Stoney Creek area on west side of Emerald Road, just south of intersection with Route 40 (36°55'43"N, 77°21'08"W)
7 September 2016. Jill Spear, Matt Overton, and Nancy Van Alstine.

County Record: On 7 September 2016 an Eastern Gartersnake was seen ingesting a marbled salamander next to small drainage channel along the west side of Emerald Road in Sussex County. Digital photographs were taken to record the event. We were conducting a botanical survey of the area under a Dominion powerline right-of-way when the snake was observed. No populations of this snake have been reported for Sussex County (Mitchell J.C. and K.K. Reay 1999, Atlas of Amphibians and Reptiles in Virginia. Special Publication Number 1, Virginia Department of Game and Inland Fisheries, Richmond, VA 87pp.; and Tobey 1985, Virginia's Amphibians and Reptiles: A Distributional Survey. Virginia Herpetological Society 121pp.). Gartersnakes have a spotty distribution in southeastern Virginia and have been reported for Dinwiddie and Prince George Counties to the north, Isle of Wight to the east, Greenville to the west, but not Surry to the east, or Southampton to the south. Digital Photographs have been deposited in the VHS Archive as a voucher (#416).

Jill Spear, Nancy Van Alstine
Virginia Natural Heritage Program
600 East Main Street, 24th Floor
Richmond, VA 23219

Matt Overton
Dominion Resources Services
Environmental Biology
4111 Castlewood Road
Richmond, VA 23219



***Virginia v. valeriae* (Eastern Smooth Earth Snake)** VA: Amherst Co., George Washington National Forest (37.631797, -79.359777). 23 April 2016. Tom Holman.

County Record: During a survey in the George Washington National Forest, an adult Eastern Smooth Earth Snake was uncovered under a rock slab in a roadside ditch. The temperature was about 20°C and the rock this individual was under, was lying in the shade. The habitat was dry overall, but under the rock was moist from a rain the day before. This individual seemed to have shed recently, and was a great specimen for photographs. Eastern Smooth Earth Snakes have been reported from Bedford County to the southwest, and Campbell County to the south, but has not been previously reported for Amherst County (VHS Website and FWIS Database). A digital photo was deposited in the VHS Archive (#411) as a voucher.

Tom Holman

Liberty University Student
Lynchburg VA



***Malaclemys terrapin* (Diamond-backed Terrapin):** VA, Mathews County, Bethel Beach Natural Preserve. 24 April 2014. Karen Nowak.

County Record: While visiting Bethel Beach Natural Preserve on 24 April 2014, my daughter found three baby Diamond-backed Terrapins on the beach. The turtles were photographed then returned to the point where they were found. The photos were sent to the VHS to confirm their identity, and we were informed there was no previous record for Mathews County. Diamond-backed Terrapins have been reported for Gloucester and York Counties to the south, so their presence in Mathews is not unexpected. A digital photo was submitted to the VHS Archive (#414) as a voucher.

Karen Nowak
Gloucester



***Trachemys scripta scripta* (Yellow-bellied Slider)** VA: Greensville Co., Private agricultural field (36°39'33.04"N, 77°30'37.87"W). 1 June 2016. Jason D. Gibson.

Diurnal Nesting Observation: Oviposition is one of the most important behavioral events in the life of a turtle, for it allows the continued existence of the species. This activity is very complex in that the female must deposit eggs at the right time of the year which will allow the eggs to hatch in favorable conditions. Additionally, the female must select soil with the best biophysical features which will increase the survivability of the offspring (Zug, G.R. et. al. 2001. Herpetology: An Introductory Biology of Amphibians and Reptiles. Academic press, London. 630 pp.). Another aspect that may be critical to the survivorship of the eggs is the time during the day when the nest is constructed. Little is stated in the literature about when this species' females dig nests. A general statement indicating that most nest construction takes place from

late afternoon to early morning can be found in summary books highlighting the life history of *Trachemys s. scripta* (Mitchell, J.C. 1994. The Reptiles of Virginia. Smithsonian Institution Press, Washington, DC. 352 pp.; Ernst, C. H., and J.E. Lovich. 2009. Turtles of the United States and Canada. Johns Hopkins University Press, Baltimore, Maryland. 840 pp.). Gibson (2003. Field Notes: *Trachemys scripta scripta*. Catesbeiana 23(2): 71) reported a nest digging time of 1645 h for a female Yellow-bellied Slider turtle in Chesapeake Virginia. An earlier nest digging time of 1445 h was reported for a female in Hoke County North Carolina (Palmer, W. M., and A. L. Braswell. 1995. Reptiles of North Carolina. The University of North Carolina Press, Chapel Hill, North Carolina. 412 pp.). This note describes the earliest *Trachemys s. scripta* nesting time in Virginia that the author could find in the literature.

On 1 June 2016 at 1109 h a female Yellow-bellied Slider was observed standing in an agricultural field positioned adjacent to a swamp. Upon closer inspection the female was found to be digging a nest. Several digital photos were carefully taken from a distance and the site was immediately vacated as to not disturb the female's activity. By 1226 h the female had departed and the site where the hole was dug was investigated. The entrance to the nest was packed down with sandy soil. The hole was gently excavated to see if eggs were deposited. Ten eggs were found in the nest chamber. This observation pushes the known nest construction time even earlier to before 1454 h as reported in Palmer and Braswell (op. cit.). This seems to be a poor time for a female to lay eggs because of the possibility of predation, but during the same day two other females were observed coming to the same field to lay eggs. Tropical storm Bonnie was positioned off the coast of North Carolina and Virginia, so the female may have sensed a barometric pressure or humidity cue which triggered a nesting behavior. A strong band of rain did occur at 1700 h to 1900 h later that same day. Agricultural fields present both an opportunity for easy nesting sites, free of large rocks and roots, but poses a potential threat to the eggs depending on the timing of plowing and exposure to agricultural chemicals such as pesticides, herbicides, and fertilizer. Future studies on the impacts of agriculture on turtle reproduction, both positive and negative, are suggested and warranted.

Jason D. Gibson

Patrick Henry Community College
STEM Division
645 Patriot Avenue
Martinsville Va, 24112

***Plestiodon laticeps* (Broad-headed Skink)** VA: Stafford Co., Stafford, approximately 100 m south of the intersection of Sentry Court and Brooke Crest Road and about 1.5 km north of Crow's Nest Natural Area Preserve. 28 April 2015. Jennie Davis Flinn.

County Record: We purchased our home in January 2015 and soon thereafter noticed a reasonably-sized hole going under the concrete front steps. We checked frequently to try and find out what was inhabiting the space under our stairs and finally saw a male broad-headed skink. I was able to get a photograph and we continue to see it from time to time, basking in the sun. Broad-headed Skinks, because of their similarity to Five-lined skinks can be difficult to identify, since scale characteristics are necessary to differentiate these species. There is a spotty distribution of the Broad-headed Skink in Northern Virginia. This report marks the first voucher for the Broad-headed Skink in Stafford County, although they have been reported in Prince William and Fauquier Counties to the north and King George and Caroline Counties to the south (VHS Web Site, FWIS Database). A digital photo was submitted to the VHS Archive as a voucher (#407)



Jennie Flinn
Sentry Court
Stafford, VA

***Plestiodon laticeps* (Broad-headed Skink)** VA: Roanoke Co., Glenvar Heights Blvd.
(37° 16' 22" N, 80° 9' 40" W). 22 May 2015. Karen Powers. (Invalid Record - Skink is *P. fasciatus*)

County Record: After having observed and photographed adult and juvenile Five-lined Skinks (*Plestiodon fasciatus*) living in drilled holes in my brick home for several years, I came upon a male Broad-headed Skink in the same area on 22 May 2015. It had fallen into my window well and was unable to escape without assistance. I captured and photographed this adult Broad-headed Skink, making sure the scale pattern on its face was clear. The digital photographs were shared with Susan Watson and John (J.D.) Kleopfer from the Virginia Department of Game and Inland Fisheries. Both verified the identification as a Broad-headed Skink. Immediately after photographing it, the Broad-headed Skink was released within 5m of capture. Although I have continued to observe Five-lined Skinks in the vicinity, no other Broad-headed Skinks were observed in 2016.

This species has been documented immediately to the south in Montgomery County, and to the north in Botetourt County (Mitchell and Reay, 1999. Atlas of Amphibians & Reptiles in Virginia. Richmond, VA: Virginia Department of Game and Inland Fisheries. 122 pp.). It is likely that this species has been present in Roanoke County for some time, but simply not been observed due to their arboreal habits and similarity to the Common Five-lined Skink. Mitchell and Reay (ibid) report that distribution records like this are needed to understand the range of this uncommon lizard. A digital photograph of this specimen was deposited with the VHS Archive (#410) as a voucher.



Karen Powers
Radford University
Department of Biology
Radford VA 24142

***Plestiodon fasciatus* (Common five-lined skink):** VA Bedford County, Smith Mountain Cooperative Wildlife Management Area. (N 37° 03' 34.8"; W 79° 30' 59.8") 30 April 2016. Paul Sattler.

Size record. On 30 April 2016 I was investigating the Bedford side of the Smith Mountain Lake Cooperative Wildlife Management Area. I had only recently become aware of the existence of this public land and was examining the habitat to see what amphibians and reptiles might be present. It was an overcast and rainy day such that most reptiles encountered were found under rocks and logs. I drove the road into the Wildlife Management Area to the closed gate then proceeded on foot. Because of the weather, I was not encountering many animals. However, upon flipping a flat rock by the side of the road, I saw and captured a large skink. Because of the animal's large size, I assumed it was *Plestiodon laticeps*, the Broad-headed skink. As I was not sure if there was a county record for this species, I retained it for taking some good quality photos under better light conditions. Upon closer examination of the lizard back in the lab, the scale patterns on the head made me question my initial identification. Close-up photos of the head were sent to Joseph Mitchell, who confirmed the animal as *Plestiodon fasciatus*, the Common Five-lined skink. Measurements of the animal gave a SVL of 8.6 cm and a TL of 18.1 cm. This ties the national record for SVL for the species, and exceeds the Virginia record of 7.7 cm (Mitchell, J.C. 1994. The Reptile of Virginia. Smithsonian Institution Press, Washington DC. 352 pp.) Because of the record size of the animal, it was retained as a voucher and currently resides in the Liberty University Natural History Museum collection. Photos were also deposited in the VHS Digital Archive (#424).

Paul Sattler

Department of Biology
Liberty University
Lynchburg, VA

***Sceloporus undulatus* (Eastern Fence Lizard)** VA: Pittsylvania Co., 181 Samuel Court (36°41'31.29"N, 79°25'32.03"W). 29 December 2016 and 12 February 2017. Jason D. Gibson.

Early and Late Emergence: The Eastern Fence Lizard has a statewide distribution and is commonly found around residential dwellings (Mitchell, J.C. 1994. The Reptiles of Virginia. Smithsonian Institution Press, Washington, DC. 352 pp.). The activity of this species varies but usually depends on having warm temperatures. Mitchell (op. cit) records an activity period between March and November but gives no specific dates. In North Carolina, Fence Lizard activity has been recorded in every month (Palmer, W. M., and A. L. Braswell. 1995. Reptiles of North Carolina. The University of North Carolina Press, Chapel Hill, North Carolina. 412 pp.). The earliest activity date reported by Palmer and Braswell (op. cit) was 8 January and the latest activity date was 27 December. In this note I report the earliest and latest activity dates for the Eastern Fence Lizard in Virginia.

On 29 December, 2016 at 1400 h I observed a male Eastern Fence Lizard basking on the surface of a mulch bed at my residence. The air temperature was 14°C at the time and the temperature during December leading up to this observation was generally mild. February was unusually warm and beginning on 12 February I began to observe *Sceloporus* once again. On 12 February, 2017 at 1103 h I observed four Eastern Fence Lizards basking on the porch of my residence. The air temperature was 23°C. This was not a one day observation. I went on to observe Eastern Fence Lizards on 17, 18, 19, 23, 25, 26 and 28 February. I stopped recording observations in March since this species is already known to be active during this month. The lowest temperature that a fence lizard was seen active was 8.8°C on 26 February. Many species are active during winter months during periods of warm weather. Any and all observations of such events should be reported so we can gain a better understanding of the life history of each species.

Jason D. Gibson

Patrick Henry Community College
STEM Division
645 Patriot Avenue
Martinsville Va, 24112

***Regina septemvittata* (Queen Snake)** VA: Campbell Co., Opossum Creek downstream from Lake Hydaway. (37.340981° N, 79.148282° W). 7 February 2017. Cass Elizabeth Rupert and Kyle Harris

Early Seasonal Record: Queen Snakes have frequently been observed downstream from Lake Hydaway in Campbell County in and around the edges of Opossum Creek, for several years. On 7 February 2017, at approximately two in the afternoon, a Queen Snake was observed about a meter from the water while basking on top of fallen leaves beside raised sycamore tree roots. Previous records indicate that Queen Snakes have been observed as early as 21 February (Mitchell J.C. 1994, *The Reptiles of Virginia*. Smithsonian Institution Press, Washington DC. 258 pp.), so this observation pushes back the earliest record by two weeks. The temperature high for 7 February 2017 was 22.2 Celsius with little-to-no cloud cover. The Queen Snake was captured, photographed, and released. A digital photograph of this animal was deposited in the VHS archive (#426).

Cass Elizabeth Rupert

6327 Logans Lane
Lynchburg VA 25402

Kyle Harris

Liberty University
Department of Biology
Lynchburg VA 24515



***Sternotherus odoratus* (Eastern Musk Turtle)** VA: Page Co., South Fork Shenandoah River, end of Backwash Road (County Road 645) (38° 40' 31.4" N; 78° 31' 32.9" W). 8 February 2017. Ed Monger.

Early Activity: Upstream from the Luray Hydroelectric Dam, the South Fork of the Shenandoah River makes a hard right turn to the east. The bank on the inside of the turn consists of low-lying land that is subject to recurrent flooding. Over time, this flooding has created an area that is known locally as "The Backwash". A crude dirt road bisects the backwash area. The downstream side of the road opens to the river; the upstream side is basically a narrow pond. On 8 February 2017, I observed a turtle crossing the dirt road, moving towards the pond. It was unperturbed by my presence and marched by, close enough to touch. I took a series of digital photos as it went by, and I sent two of these photos to the VHS. Craig Abbott identified the species as an Eastern Musk Turtle. The weather in early February was unusually warm with a daytime high on 7 February of 23.4°C (74.1°F) and on 8 February of 19.7°C (67.5°F). I observed at least 8-10 other similar turtles, but they all went into the water before I could get close enough to photograph them. Mitchell (The Reptiles of Virginia. 1994. Smithsonian Institution Press, Washington D.C. 352pp.) states that Eastern Musk Turtles are active March to November. This record in early February is thus noteworthy. Digital photos have been submitted to the VHS Archive (#408) as a voucher.

Ed Monger
Harrisonburg



***Diadophis punctatus edwardsii* (Northern Ring-necked Snake)** VA: Orange Co., Stone Woods, Unionville, VA (38° 13' 40" N, 77° 52' 24" W). 5 April 2017. Daniel Neff, Roger Neff, and Matthew Neff.

County Record: On 5 April 2017 an individual *D. p. edwardsii* was observed while raking the yard. The observation of the Northern Ring-necked Snake is a new county record and has not been previously documented for Orange County by Mitchell and Reay (1999. Atlas of Amphibians and Reptiles in Virginia. Special Publication Number 1, Virginia Department of Game and Inland Fisheries. Richmond, VA 122pp.). *Diadophis p. edwardsii* was previously known in counties surrounding Orange County: Albermarle, Greene, Madison, Culpepper, and Spotsylvania (VAFWIS database). A digital photograph of the specimen was submitted to the VHS archives (#430).



Daniel Neff
13095 Saint Just Road
Unionville, VA 22567

***Gyrinophilus porphyriticus porphyriticus* (Northern Spring Salamander)** VA: Clarke Co., about 4 km west of the town of Paris (39° 00' 36.93" N 77° 59' 19.34" W). 16 April 2017. Matthew Neff, Greg Zell, and Joey Zell.

County Record: On 16 April 2017 three larval *G. p. porphyriticus* were observed in a stream as it emerged from underground. Other salamanders observed in the same stream were *Eurycea bislineata*, *Psuedotriton ruber ruber*, *Desmognathus focus*, and *D. monticola*. The observation of the Northern Spring Salamander is a new county record and has not been previously documented in Clarke County by Mitchell and Reay (1999. Atlas of Amphibians and Reptiles in Virginia. Special Publication Number 1, Virginia Department of Game and Inland Fisheries. Richmond, VA 122pp.). *Gyrinophilus p. porphyriticus* is known in two counties to the west and southwest of Clarke County: Frederick County and Warren County respectively (VAFWIS database). A digital photograph of the specimen was submitted to the VHS archives (#431).

Matthew Neff

Department of Herpetology
National Zoological Park
Smithsonian Institution
MRC 5507, Washington, DC 20013



***Chrysemys picta picta* (Eastern Painted Turtle)** VA: Henry Co., Beaver Creek Reservoir (36°44'29.62"N, 79°52'19.60"W). 12 April 2017. Martina L. Stevens, Emilee B. Janney, Jason L. Worley, and Jason D. Gibson.

County Record: The Eastern Painted Turtle has statewide distribution with the exception being the extreme southwest corner. It is surprising to still find counties lacking records for this species since it is easy to identify and common to see basking on logs. Only fifteen counties are lacking records for this turtle (Virginia Herpetological Society Reptile and Amphibian Database). A search through Mitchell and Reay (An Atlas of Amphibians and Reptiles in Virginia. 1999. Special Publication No. 1. Virginia Department of Game and Inland Fisheries, Richmond, VA. 122 pp.), the Virginia Herpetological Society's Reptile and Amphibian Database, and the Virginia Department of Game and Inland Fisheries FWIS Database yielded no records for this species in Henry County.

On 12 April 2017, during a herpetological survey of the Patrick Henry Community College campus in Henry County, five Eastern Painted Turtles were captured in four baited hoop turtle traps set in Beaver Creek Reservoir. Four turtles were males and each had the following measurements: carapace length (CL) 127 mm plastron length (PL) 114 mm; CL 82 mm PL 75 mm; CL 108 mm, PL 97 mm; and CL 110 mm PL 100 mm. The female turtle had a CL 142 mm and a PL 131 mm. One turtle was found with an eye infection and one turtle was observed to have a cleft in the middle of its upper beak. A digital photograph has been deposited in the VHS Digital Archive (#429) to voucher this new county record.

Martina L. Stevens, Emilee B. Janney, Jason L. Worley, and Jason D. Gibson

Patrick Henry Community College
STEM Division
645 Patriot Avenue
Martinsville, Va. 24112



***Acris crepitans* (Eastern Cricket Frog)** VA: Henry County, Beaver Creek Reservoir (36°44'29.15"N, 79°52'18.59"W), 12 April 2017, Jason Gibson, Emilee Janney, Martina Stevens and Jason Worley.

County record: The geographical range of any species depends on many factors including weather patterns, soil quality, proper habitat, and past climatic events. Knowing this range is important so one can understand if that species is expanding or contracting its range due to changes in climate, disturbance by human activity, interspecific competition with species occupying a similar niche, or population declines from disease outbreaks. Our current knowledge of the Eastern Cricket Frog's distribution suggests it is confined to the eastern two thirds of the state. Major gaps in our knowledge of this species' range exist due to the lack of survey work done in the Piedmont and southwestern counties.

On 12 April 2017, 27 adult Eastern Cricket frogs were collected along the edge of Beaver Creek Reservoir in Henry County. This species has not been previously reported for this county in Mitchell and Reay (An Atlas of Amphibians and Reptiles in Virginia. 1999. Special Publication No. 1. Virginia Department of Game and Inland Fisheries, Richmond, VA. 122 pp.), the Virginia Herpetological Society's Reptile and Amphibian Database, or the Virginia Department of Game and Inland Fisheries FWIS Database. Our observation documents a small western range extension for *Acris crepitans* along its southern margin and documents a new county record. A digital photograph has been deposited in the VHS Digital Archive (#428) as a voucher.

Emilee B. Janney, Martina L. Stevens, Jason L. Worley and Jason D. Gibson

Patrick Henry Community College

STEM Division

645 Patriot Avenue

Martinsville, Va. 24112



President's Corner

Greetings fellow herpers,

We have finally made it to spring! The winter months always seem to drag along as I sit around waiting for the Carolina allspice to bloom again. It has been a busy couple of months for me personally, but there is quite a bit of VHS news to share.

First and foremost, the completed native species bibliography was turned over to the VHS earlier this year. If you have been following, Joe Mitchell tirelessly worked on a comprehensive bibliography of Virginia herp species on behalf of the VHS. After almost a year, this document can now be found on our website. Going forward, the VHS will be updating this document which will serve as a valuable asset for students and researchers.

If you were at the fall meeting, you know that Craig Abbot was awarded the Member of the Year award for his tireless efforts on our species identification emails. Sadly, I have recently learned that Craig will be moving out of state. Perhaps we can convince him to keep answering the emails for us, but if not, we have added two more to the ID team. This team now consists of Craig Abbot, Alonso Abugattas, Mike Clifford, Bonnie Keller, Mark Khosravi, Matt Neff, Kory Steele, John White and myself.

As most know, funding research grants is one of the main purposes of the VHS. We had some great submissions this year and we have decided to fund three of them. The first study is from Dr. Becker at Liberty University and will focus on the effects of chytridiomycosis and ranaviral disease on populations of eastern newts and Peaks of Otter salamanders. The second research proposal comes from Susan McGrath of James Madison University. Sarah will be testing a new method of surveying tree frogs that would prove to be less traumatic for the captured specimens. Lastly, Jenna Salter of James Madison University will be testing a new method of gathering environmental and tracking data for animals in the wild. We congratulate the grant recipients and look forward to their findings!

It is another busy year for surveys. We currently have them scheduled at Big Woods Wildlife Management Area, Mole Hill in Rockingham County, Newport News Park and Hidden Valley Wildlife Management Area. The spring business meeting will be held at the Newport News Survey on that Friday night. This will be a unique survey as the VHS is teaming up for a BioBlitz on the property. The BioBlitz is open to the public and we encourage everyone to attend. If you know someone who might be interested in surveying other taxa, bring them along as well. More information about all these surveys can be found on our website.

Lastly, I know many of our members may be following the lawsuit filed by USARK regarding injurious species and the Lacey Act. The Supreme Court has made their final ruling on the interstate shipment clause, but others parts of the lawsuit are still pending. If you are interested in learning more, plenty of information can be found online.

As always, I wish everyone a happy herping season. Stay safe out there!

Mike Salotti
VHS President

Virginia Herpetological Society
Annual Business Meeting-Virginia Commonwealth University
Minutes, 22 October 2016

Mike Salotti, President of the Virginia Herpetological Society (VHS), opened the meeting at approximately 17:00 hr. EDT and provided the agenda for the meeting.

News

1) Decontamination Practices for Future Surveys

Mike Salotti reported that decontamination efforts for all of the 2016 smaller field surveys were, in general satisfactorily accomplished. There were some issues with decontamination at larger surveys such as Natural Bridge. Mike indicated that he preferred to use Novalsan (active ingredient: 2% chlorhexidine diacetate). This is a hazardous material but with spray applications there is no residual to dispose of. Bleach remains an option but the residual needs to be dumped on pavement, if possible, away from the environment and storm drains etc. Because bleach is volatile, lasting environmental damage is unlikely. Mike will investigate the purchase and use of individual wristbands as verification of decontamination and liability waiver execution. Hand stamp and memento wristband possibilities will also be investigated.

2) New State Reptile

The Virginia legislature has approved the Eastern Gartersnake as the new state snake. Several years ago Larry Mendoza petitioned state senator Dick Black about sponsoring legislation to nominate the Eastern Ratsnake as the state reptile. Senator Black preferred the Timber Rattlesnake, but no action was taken at that time. Virginia does not yet have a state amphibian. License plates with an Eastern Gartersnake were discussed as a possibility. A minimum of 400 license plates would be required and some of the proceeds would go to the sponsoring entity. Mike Salotti agreed to investigate.

3) Mobile Card Reader

Matt Close, VHS Treasurer, successfully used the free VHS card reader (3D cellular 4G/5G), to process credit card payments to VHS today.

4) Member of the Year

In recognition of his surveys participation, continuous VHS herp identification assistance and dozens of field stick/snake hook donations, VHS has awarded Craig Abbott, "Member of the Year" for the 2016. Craig was not able to attend and receive his plaque award but Matt Close will deliver it to him. A photograph was taken of Craig's plaque by Bonnie Keller and will be included with the announcement in the next VHS Newsletter.

Committee Reports

Newsletter Report

VHS Newsletter Co-Editor Susan Watson indicated the target publication date for the next VHS Newsletter would be late November/early December.

Catesbeiana

Paul Sattler, Editor of Catesbeiana, reported Volume 36, No.2 was just sent out. One hundred pages in Volume 36 may be a page length record. There are a fair number of potential articles for 2017 and several field notes for Volume 37, No.1. More editorial reviewers have been added, which will help the review process. Some articles have been received and are in review, while several surveys are being written up.

Education

Mike Clifford, Education Committee Chair, was unable to attend the meeting but provided the annual Education Committee Report in advance of the meeting.

Café Press

Kelly Geer, Café Press Coordinator, recommended that VHS seek out new images/photos that could be uploaded to present a fresh image for Cafe Press. The Hog-nosed Snake T-shirts have remained in the “Members Only” section and should probably now be made available to the general public. Kory Steele, VHS Past President, suggested that a time limit of perhaps 6 or 12 months for “Members Only” sales items. The illustration for the Hog-nosed Snake T-shirt cost \$60-70. For new images a budget would need to be established based on the Café Press commission revenue earned, which averages \$1.00~1.50 per sale with a break-even target for new items. Dave Perry and Matt Close agreed to provide Café Press sales revenue for the last three years. All agreed that a combination of high quality items and inexpensive items (i.e. bumper stickers) would provide the optimal product mix.

Treasurer

Matt Close, VHS Treasurer, reported that the current VHS cash balance is \$12,181.18. The most recent Treasurer report is contained Catesbeiana 36(2). The current cash balance does not account for a future \$3,500 payable due to Joe Mitchell upon completion of a digitized Virginia herpetological bibliography that will include published work from the mid 1600s forward. Mitchell’s project is to be completed no later than February 5. VHS will maintain the bibliography thereafter. Mike Salotti agreed to provide a copy of the VHS memorandum of understanding to Dave Perry for VHS record keeping.

Secretary

David Perry, VHS Secretary, reported that the minutes for the 2016 Spring Meeting had been published in Catesbeiana 36(2) and requested that any amendment suggestions be forwarded to him for review.

Website/Technology

VHS Webmaster, reported that dynamic maps had been auto generated from the VHS and VDGIF data base and were no included on the species section of the VHS website. 70% of the Apple App for the frogs of Virginia has been completed.

VHS Grants

Kory Steele, VHS Grants Chair, reported that the VHS website will be revised to accommodate non-research grants to make the application process simpler and eliminate the deadline.

Fall 2016 Meeting Minutes

Tracking efforts are also underway to make sure that all grantee obligations to VHS are satisfied. In addition, as a separate project, Kory is developing a pdf style history of VHS including all surveys completed, treasury cash balance trends etc.

Conservation Committee

David Perry, VHS Conservation Chair, reported the first draft report on the May 1 and May 15 surveys of Chickahominy Wildlife Management had been sent out for editorial review. For 2017 three potential Conservation Committee survey sites had been identified and will be evaluated.

Survey Committee

Jason Gibson, VHS Survey Committee Chair, reported on the status of the 2016 VHS survey reports.

<u>Survey</u>	<u>Author</u>	<u>Status</u>
Stewarts Creek	Jason Gibson	In process
Natural Bridge	Mike Salotti	In process/Data sheets in
Dixie Caverns	Matt Neff	Limited species/Publish decision
Chickahominy	Dave Perry	First draft & Data sheets in
Quarry Gardens	Matt Neff	In process

Jason suggested that the Herp Blitz would be looking at survey sites in southwest Virginia and was investigating a possible collaboration with members of the Tennessee Herpetological Society for the Herp Blitz. Boy Scout camps and Orange County were suggested as potential future survey site venues. Given the large number of surveys in 2016, Jason recommended email coordination among survey coordinators for 2017 to avoid date conflicts. Two other suggestions for VHS surveys were possible survey event t-shirts and survey site cell phone capability be included in the site pre-evaluation.

New Items

Mike Salotti introduced some new business topics.

Lifetime Members

Mike Salotti requested suggestions for a small gift for lifetime members. At the meeting it was estimated that VHS has approximately 60 lifetime members. One suggestion was recognition of lifetime members on the VHS website, although it was further suggested that due to privacy concerns individual lifetime member approvals should be obtained first.

Possible 2017 Survey Sites

Kory Steele introduced Elizabeth Wilkins, Past President of Peninsula Master Naturalists (PMN). PMN has organized a BioBlitz of Newport News Park for the weekend of May 20, 2017. This is a state protected natural area and wetlands comprising 8,000 acres. Approval for the BioBlitz has already been obtained from the city of Newport News. There are two large picnic areas, one of which could be made available for the Friday evening VHS business meeting. There was consensus agreement that the 2017 annual VHS Spring Survey be included in the PMN BioBlitz of Newport News Park.

VHS taking over the North American Amphibian Monitoring Program (NAAMP)

Kory Steele mentioned that NAAMP is shutting down its amphibian monitoring program. NAAMP has promised to provide its Virginia data base to VHS. VHS could continue to update and maintain the data base. It was recommended to consider this potential opportunity at the next business meeting.

Suggestions

Bonnie Keller suggested that VHS develop a herpetology program for children of middle school and high school age. She envisioned a 1.5-2.0 hour program perhaps in coordination with the annual spring survey. Bonnie was encouraged to further develop her suggestion for future consideration.

Dr. M. Kevin Hamed of Virginia Highlands Community College and one of the presenters in the morning session also attended the business meeting. Kevin is a member of the Tennessee Herpetological Society (THS) and suggested that VHS consider a joint meeting with THS in the fall of 2019. THS will rotate its annual meeting to eastern Tennessee in 2019 and Bristol might be a good location for a joint meeting. There are five universities in the area. It was also suggested that a joint meeting could be a two day event. There was some concern raised about the distance many VHS members would need to travel but there was general agreement to consider this future possibility.

Matt Close recommended that VHS provide refreshments for future annual meetings. There being no other business to discuss, the meeting was adjourned by Mike Salotti at approximately 18:05 hr. EDT.

David A. Perry
VHS Secretary

Treasurer's Report

Virginia Herpetological Society Treasurer's Report April 27, 2017

Previous Report Balance – October 20, 2016 \$ 12,199.12

*note correction from (\$12,181.12)

Net Receipts (excludes PayPal fees):

Oct Dues (from Oct. 21)	\$ 560.00
Nov Dues	\$ 53.00
Dec Dues	\$ 135.00
Jan Dues	\$ 316.00
Feb Dues	\$ 324.00
Mar Dues	\$ 585.00
Apr Dues (Through Apr 27)	\$ 255.00
Donations	\$ 100.00
CafePress Commission	\$ 64.87
Amazon Smile Credits	\$ 87.34
GoodShop	\$ 20.36
VHS Grant Refund-SFD	\$ 500.00
2016 Fall Meeting Auctions	\$ 222.00

Total Net Receipts \$ 3222.57

Disbursements:

Mitchell Contract (VA Herp Bibliography)	\$ 3500.00
Grants-in-Herpetology (2@\$500)	\$ 1000.00
Award-2016 Member of the Year Plaque	\$ 74.64
Award-2016 Fall Meeting Photo Contest	\$ 100.00
VA SCC E-File	\$ 26.95
VA Collecting Permit Renewal	\$ 20.00
2016 Spring Survey Supplies	\$ 61.20
Office Supplies	\$ 53.65
Postage	\$ 6.63
PayPal Fees (Oct-Apr)	\$ 88.54

Total Net Disbursements \$ 4931.61

Current BB&T Balance \$10,126.73

Current PayPal Balance \$ 364.65

Current Total Balance \$10,491.38

Pending:

Grants-in-Herpetology (Check mailed)	\$ 500.00
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VHS Membership (dues current): 163

Matthew Close
VHS Treasurer

VHS Spring Survey Announcement 2017

May 19th - 21st

Newport News Park

This year the Virginia Herpetological Society will hold its annual spring survey meeting and survey in conjunction with a Bioblitz at Newport News Park in southeastern Virginia on May 19th - 21st, 2017.

We will have nearly 7,000 acres of forested land spread out among two reservoirs to search for and document amphibians and reptiles. Some areas have unique vernal pools formed from sinkholes and are part of the Grafton Ponds Natural Area Preserve.

The VHS has particular goals for this survey. The state threatened Barking Treefrog has many historical observations in the area, but none in the last decade or more. The state threatened Mabee's Salamander is relatively abundant within the Grafton Ponds complex. It is important to document if the VHS finds Mabee's in a unique habitat or has expanded their range. Copperheads were first observed at Newport News Park in 2016, even after decades of documenting other herps. There is reason to believe the copperheads are breeding, so determining just how abundant they are would be helpful to park management.

If you are interested in attending this event please register at:

<https://goo.gl/forms/l8aFBJkGyRWDj7bz2>

Information on onsite camping, off-site lodging, and meeting times and locations can be found below.

If you have questions or concerns please contact:

Kory Steele, the past president of the VHS, and an organizer of the Newport News BioBlitz
past-president@vaherpsociety.com The VHS coordinator for this survey is Jason Gibson
frogman31@gmail.com

Schedule

- **Friday May 19th** - The spring business meeting will be held at 6:00 pm in the Campground Education Building at Newport News Park. Immediately following the business meeting (approximately 7pm) we will discuss survey sites and what animals we might expect to find. Team leaders will meet and discuss safety concerns and how to fill properly record all amphibian and reptile observations.
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- **Saturday May 20th** - For our first day of the survey we will meet at 8:00 at Picnic Shelters 19 and 20. Before anyone surveys they must have all gear and boots disinfected. After a brief introduction to the park and everyone has been disinfected and signed waiver forms, participants will be broken into survey teams. A night survey will be held at 8:00 p.m to look for nocturnal herps and document any calling frogs. We will meet at Picnic Shelters 19 and 20 to conduct this night survey.
-
- **Sunday May 21st** - We will meet again at 8:00 on Sunday morning at Picnic Shelters 19 and 20 for the second day of our survey. This survey will extend until 1 pm .
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Lodging

On-Site

Newport News Campground is 5 minutes away from BioBlitz Basecamp! The campground entrance is a very short drive down Jefferson Avenue from the park's main entrance. We have reserved 15 campsites close to each other, the back half of Loop C, sites C75-C90, for VHS members. A Campsite Map is found at: <http://www.nnparks.com/nnparkmap.pdf>

These Loop C sites are nice because they're a bit further in, so less traffic going by. It is easy walking distance to restrooms, near a nice playground, and all these sites have electricity & water. The entrance to the 5-mile loop mountain bike trail is also close by (trail is wide and easy, not technical, some hills, mostly packed soil although some spots feature pea gravel or sand).

These sites will be \$36 per night. (That includes the tax) You must pay for one night in advance by Visa or Mastercard when you call to make your reservation. You may cancel up to 2 days in advance and still receive a full refund. Maximum 5 people per site. If you bring an RV, you may also have a tent on site. More info at: http://www.nnparks.com/parks_nn.php

Campers who want a reserved site must call before the end of March to make their reservation. Tell them your site is reserved by the Virginia Herpetological Society.

Call: (757) 888-3333 • 1-800-203-8322

Off-site Lodging

Other campgrounds are within 25 minutes of the park, including:

- Fort Monroe, Hampton: <http://www.thecoloniesrvandtravelpark.com>
- Gloucester Point: <http://www.jellystonegp.com>
- Williamsburg KOA: <http://www.williamsburgkoa.com>
-

Nearby hotels:

- Comfort Inn Newport News/Williamsburg East
- Comfort Suites Newport News Airport (walk to Olive Garden & Red Lobster; across busy street from Chili's, Panera, Starbucks, Smokey Bones, Moe's, Longhorn Steakhouse, Honeybaked Ham, Pho 79. Tropical Smoothie, Trader Joe, Aldi, and other shops)
- Extended Stay America Newport News I-64 Jefferson Avenue (Very close to Carrabba's, Fuddrucker's, Cracker Barrel. Close to Subway, The Melting Pot, Japan Samurai, Patrick Henry Mall, Starbucks, Target, Applebee's, Cheddar's, Noodles & Co., Outback Steakhouse, Whole Foods, PF Chang's, Mellow Mushroom pizza, FirstWatch breakfast & lunch, Zoe's Kitchen)
- Hampton Inn & Suites Newport News (Oyster Point) (Walk to Applebee's, The Melting Pot, Japan Samurai, Subway. Close to Carrabba's, Fuddrucker's, Cracker Barrel. Close to Patrick Henry Mall, Starbucks, Target, Cheddar's, Noodles & Co., Outback Steakhouse, Whole Foods, PF Chang's, Mellow Mushroom pizza, FirstWatch breakfast & lunch, Zoe's Kitchen)

****VHS MEMBERS ONLY ****

VHS Conservation Committee Surveys
Big Woods Wildlife Management Area/State Forest - Part 2
Sussex County, Virginia

Sunday May 7th - 8:30 AM to 3:30 PM

The VHS is planning to survey Big Woods WMA/State Forest, which is comprised of more than 6,000 acres (including the Parker's Branch Tract) and is located in Sussex County, VA. Due to the large amount of acreage to be surveyed, two dates have been selected to complete the survey, Sunday April 23 and Sunday May 7. The Sunday dates are necessary to avoid any conflicts with the spring turkey hunting season (Monday-Saturday).

Big Woods is a remote area, encompassing pine forest and several wetland habitats including creeks, swamps and beaver ponds. It is of special interest to the Conservation Committee as 16 herp species, with Tier I-Tier IV conservation status are within the potential range of Big Woods. Carpenter Frogs, Rainbow Snakes and Spotted Turtles may be present.

Survey participation is limited to 2017 VHS members and their one invited guest and preregistration (see VHS Web Site) is a requirement (name, cell phone #, email address, emergency contact).

Facilities are limited. All participants should pack a lunch and bring plenty of bottled water. It is recommended that water repellent and snake bite protection footwear be worn as many wetland areas will be encountered and **copperheads and cottonmouths** may be present. Please also be prepared for a woodland environment, chiggers, mosquitoes and ticks.

Big Woods is located 6-8 miles south of Waverly, VA and can be accessed from Beaver Dam Road (Route 606) by turning left on Presson Path. Route 606 intersects US 460 in Waverly. The VHS coordinator for these surveys is Dave Perry.

12th Annual HerpBlitz Announcement

The 12th annual HerpBlitz will be held at Hidden Valley Wildlife Management Area (<https://www.dgif.virginia.gov/wma/hidden-valley/>) in Washington County on Saturday June 10th and Sunday June 11th. This wildlife management area comprises more than 6,400 acres and hosts a large high mountain lake, forested mountain ridges, and many mountain streams. Hidden Valley Wildlife Management area is remote and rugged so all herpers with an adventurous spirit are welcome to attend. All coordination of this survey will be done through Jason Gibson (frogman31@gmail.com). If you are interested in attending this survey please contact Jason and he will give all up-to-date details about where and when to meet on Saturday and Sunday.

Field Notes

The field notes section of *Catesbeiana* provides a means for publishing natural history information on Virginia's amphibians and reptiles that does not lend itself to full-length articles. Observations on geographic distribution, ecology, reproduction, phenology, behavior, and other topics are welcomed. Field Notes will usually concern a single species. The format of the reports is: scientific name (followed by common name in parentheses), state abbreviation (VA), county and location, date(s) of observation, observer(s), data and observations. The name(s) and address(es) of the author(s) should appear one line below the report. Consult the editor if your information does not readily fit this format. All field notes must include a brief statement explaining the significance of the record (e.g., new county record) or observation (e.g., unusual or rarely observed behavior, extremely early or late seasonal record, abnormal coloration, etc.). Submissions that fail to include this information are subject to rejection. Relevant literature should be cited in the body of the text (see Field Notes in this issue for proper format). All submissions will be reviewed by the editor (and one other person if deemed necessary) and revised as needed pending consultation with the author(s).

If the field note contains information on a new county (or state) record, verification is required in the form of a voucher specimen deposited in a permanent museum (e.g., Virginia Museum of Natural History) or a photograph (print, slide, or digital image) **or recording** (digital recording of anuran calls) deposited in the archives of the Virginia Herpetological Society. Photographs and recordings should be sent to the editor for verification and archiving purposes; the identity of voucher specimens must be confirmed by a museum curator or other qualified person. Include the specimen number if it has been catalogued. Prospective authors of distribution reports should consult the VHS website (County/City Herp Lists) to determine if they may have a new county record. New distribution records from large cities that formerly constituted counties (Chesapeake, Hampton, Newport News, Suffolk, and Virginia Beach) are acceptable, but records from smaller cities located within the boundaries of an adjoining county will only be published if the species has not been recorded from that county. Species identification for observational records (e.g., behavior) should be verified by a second person whenever possible.

PHOTOGRAPHS

High contrast photographs (digital images) of amphibians and reptiles will be considered for publication if they are of good quality and are relevant to an accompanying article or field note. Published photographs will be deposited in the Virginia Herpetological Society archives.

Paul Sattler, Catesbeiana Editor
Biology/Chemistry Department
Liberty University
MSC Box 710155
1971 University Blvd.
Lynchburg, VA 24515

psattler@liberty.edu